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the TOT lanes, fees may need to be imposed on facility users. Fees can provide an additional source of revenue to pay for transportation improvements, especially the operations and maintenance of the TOT lanes themselves (pp. v and 1-2).

While the above report is specific to the Atlanta area, it is likely that the reported benefits of TOT lanes would equally apply to the southern California area (particularly in light of the project's proximity to the Ports of Los Angeles and Long Beach, Los Angeles International Airport, and John Wayne Airport). A TOT alternative should, therefore, be considered in combination with any other toll-based options being considered by the Lead Agency.

- **Reversal lanes.** Because peak-hour traffic along the I-405 Freeway is primarily unidirectional (from Orange County toward Los Angeles County in the morning and reversed in the evening), the Lead Agency should also explore a reversible lane design which would allow for adjustments in directionality based on changing demands.
- **Use of shoulder lane.** As indicated in the FHWA's "Efficient Use of Highway Capacity Summary – Report to Congress" (November 2010), in California, "[t]ransit vehicles may use the shoulder when general purpose lane traffic slows to 30 mph or lower. They may travel no more than 10 mph faster than traffic in general traffic lanes. The cross-section of the shoulder is at least 10-ft wide throughout the deployment area. Pavement markings to indicate the operational strategy include text indicating "Transit Lane Authorized Buses Only" (p. 23). As further indicated therein, "in response to rising levels of congestion and a lack of right-of-way for contemporary expansion of capacity, many States adopted the use of dedicated shoulder lanes, sometimes in conjunction with or instead of narrowed lane widths" (p. 25).

As a cost-efficient alternative to the construction of new HOV and GP lanes, the Lead Agency should examine the temporary and/or permanent conversion of existing interior and exterior shoulders to travel lanes.

## 7.6 Design Alternatives

A wide range of design alternatives should be considered by the Lead Agency. A number of distinct operational strategies are identified below.

- **Design exceptions.** The DEIR/S notes that the existing "HOV lanes on I-405 currently do not meet either FHWA or Caltrans operating criteria" (p. 2-19). Those facilities, however, continue to be operated with relative safety notwithstanding their lack of consistency.

As indicated in the WCC FEIR/S: "Under the (Enhanced) Reduced Build Alternative, the freeway within the SR-22/WOCC project would be improved to full geometric design standards with the exception of the following: [1] Non-standard inside shoulder on I-605 and I-405 transition areas to join to an existing non-standard shoulder. Also on I-405 and SR-22 at spot locations where California Highway Patrol (CHP) enforcement areas are recommended. [2] Non-standard lane widths 10.8 to 11.8 ft. (3.3 to 3.6 meters) on I-605 and southbound north of the HOV connector, and on Brookhurst Street dual left turn and lanes No. 1 and 2 at eastbound SR-22 ramp. [3] Non-standard median widths on I-

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605 north of the HOV connector, on I-405 at I-605, and on I-405 at SR-22" (p. 2-7). In addition, as indicated in the DEIR/S, "the existing lane width" along the I-405 Freeway "varies between 11 and 12 ft." (p. 2-1). Based on those excerpts, it is evident that Caltrans supports and has approved projects involving "non-standard" lane widths and other design deviations.

As reported in the Metropolitan Transportation Commission's and Caltrans' "Regional HOT Lanes Network Feasibility Study" (September 2007): "HOV lanes currently exhibit a wide range of design practices statewide. Lane widths vary from 12 feet to 11 feet in restricted settings. Buffer widths are typically 4 feet, but may be reduced to 1 to 2 feet in restricted settings. Median shoulder widths vary from nominally 10 feet to 4 feet, but outside (right) shoulders on most freeways are 8 to 10 feet even in restricted settings. General purpose lane widths may be reduced to 11 feet, but the rightmost lane(s) are typically 12 feet in restricted settings. The Caltrans HOV Guide offers guidance for design reductions in such settings" (p. 21).

As noted in the DEIR/S: "Design exceptions are necessary when the proposed design deviates from the standard design features presented in the Caltrans Highway Design Manual. For example, the design standard for a freeway left-side shoulder is 10 ft; design exceptions are sought for locations where the columns supporting overcrossing bridges encroach into the shoulder and narrow the shoulder to approximately 7.5 ft beneath the bridge. Nine mandatory and 18 advisory design standards would require design exceptions at one or more locations along the corridor" (p. 2-5). As such, substantial precedence exists to support the introduction of design exceptions where such exceptions can be supported.

- **Active traffic management and restriping.** As noted in FHWA's "Public Roads" (March/April 2009, Vol. 72, No. 5), in an article titled "Congestion Pricing with Lane Reconfigurations to Add Highway Capacity," where statutorily authorized, "[i]f pricing is to become a more widely used tool to reduce congestion or provide reliable travel times in major metropolitan areas, new approaches to implementation must be developed. One potential solution involves the creation of networks of free-flowing express lanes by (1) using active traffic management (ActM) strategies to dynamically manage freeways with flexible use of shoulders as travel lanes, and (2) restriping of existing pavement into narrower lanes in order to accommodate a new lane within the existing facility footprint. Agencies would operate the left lane as a priced lane, with the right-side shoulder serving as a general-purpose lane either permanently or when needed to accommodate high demand. This approach avoids the need to take away an existing lane to create the new priced lane." Under a restriping option, the FHWA indicates that: (1) no change would occur to the left shoulder; (2) one or more fee lanes could be established on the far left, reduced from a width of 3.7 meters (12 feet) to 3.4 meters (11 feet) to accommodate buffer separation between express and general-purpose lanes, with a 0.6 meter (2 foot) wide buffer; (3) general purpose lanes, reduced in width from 3.7 meters (12 feet) to 3.4 meters (11 feet), if needed to accommodate the buffer and the dynamic shoulder lane; and (4) a 4 meter (13 foot) wide dynamic shoulder lane on the far right. If extra pavement width is needed, pavement could be added or taken from the left shoulder where excess shoulder width exists. On a freeway in which the far left lane is already an HOV lane, the adjacent lane could be modified to create a two-lane fee section. If the shoulder where converted to a general-purpose lane, the number of toll-free, general-purpose lanes would remain the same as before the conversion (Ibid.).

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## 7.7 Transit Alternatives

Under Measure M2, 25 percent of the net revenue are to be dedicated to Countywide transit programs. As a result, the DEIR/S is remiss by failing to consider possible transit alternatives.

As indicated in "Congestion and Accessibility: What's the Relationship?" (Mondschein, Andrew, Taylor, Brian D., and Brumbaugh, Stephen, March 2011), published by the University of California Transportation Center (UCTC), the authors concluded that "public transit likely provides residents of a congested region with alternatives to traveling on clogged roadways; alternatives that facilitate increased activity in the face of ongoing congestion" (p. 38). Although the FHWA's "Technical Advisory T 6940.8A" states that mass transit and transportation system management alternatives should be considered when identifying reasonable alternatives, no transit-based alternatives have been examined in the DEIR/S.

As defined in Caltrans' "California HOV/Express Lane Business Plan 2009" (May 15, 2009), "the term express lanes [is used] synonymously with High Occupancy Tolling (HOT) lanes, where preferential access is provided for high occupancy vehicles or toll payments" (p. 2). The term "corridor" means "a segment of highway that includes all highway lanes and any parallel arterials" (Ibid.). As noted therein: "Currently all express lane facilities in California have a transit component either as part of the customer base or as recipients of annual revenues. These opportunities to integrate and coordinate all modes of travel should continue to be sought. In some cases transit service is being directly increased and transit stops are being revised or redesigned to encourage a shift to transit and thus increase person throughput in the corridor" (emphasis added) (p. 26). In what best appears to be an example of agency short-sightedness, notwithstanding that declaration, no "transit component" has been included as part of any of the three build alternatives presented in the DEIR/S and no project-related plans have been formulated to increase or promote transit ridership or to add or expand transit facilities as a component of the proposed action.

At the community meeting conducted in the City on June 26, 2012, the OCTA's representative stated that the proposed "express lanes" (under Alternative 3) would "promote bus rapid transit." In addition, at that same meeting, OCTA's representative stated that bus services were being "cut" based on budgetary considerations. The two statements appear inconsistent.

Absent from the DEIR/S is any discussion concerning how or commitment by the OCTA to utilize the HOV/HOT lanes for "bus rapid transit" purposes. In light of those same budgetary considerations, what concurrent commitments (presented as mitigation measures or integral project features) is the OCTA's Board of Directors making with regards to the provision of expanded bus services? What new transit facilities are being proposed in combination with each of the three build alternatives? Is a reduction in existing bus service a component of the No Build Alternative? How would the implementation of the No Build Alternative and the three build alternatives affect existing bus routes and transit facilities and/or result in the establishment of new or modified routes and/or facilities?

## 7.8 Impact-Avoidance Alternatives

In order to demonstrate the feasibility of retaining the existing soundwall along Almond Avenue in Seal Beach, the City, working with a highly respected professional traffic engineering firm (W.G. Zimmerman Engineering, Inc.), has developed a number of design alternatives that would not substantially impede the ability of the Department to undertake lane improvements to the I-

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405 Freeway. Those design alternatives, prepared specifically to avoid project-related impacts upon the College Park East neighborhood, are presented in Attachment A (Alternative Design Configurations). The City believes that implementation of one or more of those impact-avoidance alternatives, in conjunction with the incorporation of those supplemental mitigation measures presented in Section 2.3 (City-Nominated Mitigation Measures) herein, would substantially lessen the impacts of the proposed action on Seal Beach and its residents.

## 7.9 Financing Alternatives

The City is concerned about the potential impacts to its residents resulting from the proposed conveyance of management obligations and all future toll revenue to a private for-profit entity. If, as the Lead Agency purports, the entire region benefits from an expansion of freeway capacity, to the extent that project financing will play a part in the Lead Agency's determination, then more equitable financing options need to be explored.

## 7.10 Other Alternatives

Referencing SCAG's "LAX/South (Orange County) High-Speed Ground Access Study, Final Report" (October 2004) (HSGA Study):

Transportation planners throughout the Southern California region have long been concerned about mobility and ground access impacts to regional airports given the area's enormous growth in population and jobs. For example, in 1980 Southern California had a population of slightly less than 13 million; it is now anticipated that by the year 2020 the regional population will exceed 22 million. In addition, between now and 2020, the number of people using Los Angeles International Airport (LAX) will grow from 65 million a year to 86 million. That magnitude of growth will affect every Southern California resident and visitor as they attempt to move around the region on the ground or move into and out of the area by air. To help deal with mobility issues associated with that type of growth, the Southern California Association of Governments (SCAG) has adopted a Regional Transportation Plan that includes a strategy for managing airport demand through maximizing the use of all existing airports and airfields in the region. The successful implementation of that strategy requires the development and deployment of one or more high-speed transportation systems connecting regional airports to substantially reduce airport ground access by single-occupant vehicles (SOVs).

In 1999, SCAG secured funding from the Federal Railroad Administration (FRA) and the Federal Aviation Administration (FAA) to begin planning high-speed ground access projects in three of the region's most heavily congested corridors to link many of the area's major airports. Those three corridors are: [1] LAX to March AFB; [2] LAX to Palmdale; and [3] LAX to Orange County [extending between Los Angeles International Airport and the Irvine Ground Transportation Center]. A regional multi-modal high-speed ground access (HSGA) system has been identified as a principal means of connecting major regional activity and transportation centers and supporting passenger and cargo demands associated with anticipated growth in Los Angeles, Orange, Riverside, and San Bernardino Counties. The development of regional multi-modal HSGA system alignment alternatives for this study will focus on the LAX/South (Orange County) Corridor, with a potential terminal station at John Wayne Airport (JWA), Long Beach Airport (LBA), the Irvine Ground Transportation

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Center (ITC), as well as other possible intermediary stations. This project is a key component of the 1998 Regional Transportation Plan (RTP) strategy for managing airport demand through maximizing use of existing airports via high-speed transportation system connections (emphasis added) (pp. 1-1 and 1-2).

SCAG's HSGA Study identified "three final recommended alignment alternatives" connecting LAX and the ITC. As described therein: "The Southern Alignment fulfills the primary system role of Airport Connector and Feeder by providing the quickest, most direct connections to all airports in the study area. From LAX, it stays almost entirely within the I-405 corridor from I-105 to the Irvine Transportation Center, with a stub track north from the John Wayne Airport area to Anaheim. One alternative alignment uses SR-22 to serve Anaheim directly. The primary alignment using I-405 (and including the stub line to Anaheim) is approximately 58 miles long" (pp. 5-1 and 5-2). Proposed station locations included, but were not limited to, "Seal Beach West" and "Seal Beach East" (p. 4-18). In a separate SCAG-issued "LAX/South (Orange County) High Speed Ground Access Study Status Report" (SCAG, February 2007), with regards to the Southern Alignment, SCAG concluded that the I-405 Freeway alignment produced the: "(1) Best overall performance with least competition (from Orange Line, Metrolink, and others); (2) High number of stations with development potential; (3) Fewer environmental impacts; (4) Best fulfills role of airport connector."

As a result, there already exists extensive SCAG-sponsored analysis identifying the feasibility and traffic and transportation-related benefits associated with the use of the I-405 Freeway ROW for utilization as a light-rail or fixed-rail HSGA system. In recognition of the existence of alternative uses for that ROW, based on SCAG's own acknowledgement that a HSGA system is a "key component" of the 2008 RTP, and the Lead Agency's representation that the proposed action is consistent with the 2008 RTP, a high-speed rail alternative needs to be examined in the DEIR/S.

In addition, in "The Day that People Filled the Freeway: Re-Envisioning the Arroyo Seco Parkway and the Urban Environment in Los Angeles" (Loukaitou-Sideris, Anastasia, UCTC, Spring 2005), the author wrote:

More than any other city in the world, Los Angeles has come to be symbolized by its freeways. As the most monumental human-made structure in the Los Angeles basin the freeway network has determined a particular spatial order and organization of the city's urban form. Freeways have managed to transport people and goods and link points of origin with points of destination. But when they were superimposed on the smaller, finer grain of residential neighborhoods they tended to split and destroy them. In outlying city areas, the superimposition of the freeway grid on the landscape has epitomized the complete domination of the 'urban' over nature. In a process of urbanization, expansion, and unfettered growth, city fathers have often treated nature as threatening 'other' to be contained, diminished, and built upon. Thus, the city has been associated with the loss of natural habitats and open space and the laying of asphalt and concrete in an ever-expanding process of urbanization and sprawl (p. 3).

The perpetuation and expansion of that freeway network is the only vision espoused in the DEIR/S. Clearly, there are other long-ranging, innovative, and non-auto-centric visions of how best to utilize this and other transportation corridors that would serve to "reduce congestion," "increase mobility," and "minimize environmental impacts." Nowhere in the DEIR/S, however, is anything presented other than the same single-minded transformation of increasingly more

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space devoted to increasingly more automobile traffic. Reducing vehicle travel by providing individuals and firms with attractive alternative access choices (such as the telecommuting or walking) may serve to reduce traffic delays while increasing productivity.

In addition, as indicated in the FHWA's "Advanced Metropolitan Planning and Operations - An Objective-Driven Performance-Based Approach, A Guidebook" (February 2010): "It is estimated that more than half of congestion experienced by travelers is caused by non-recurring events, such as weather conditions (e.g., snow, ice, rain), work zones, special events, and major incidents and emergencies that are not typically taken into account in the traditional metropolitan transportation planning process" (p. 1-1). Major "sources of congestion" identified by the FHWA include bottlenecks (40%), traffic incidents (25%), work zones (10%), bad weather (15%), poor signal timing (5%), and special events/other (5%) (Figure 2, p. 1-1). Although the Lead Agency purports that the project's P&N is to "reduce congestion," "more than half" on the causes of congestion are never even considered in the DEIR/S.

Since the Lead Agency's P&N includes increasing travel time reliability (for a limited number of motorists), possible capacity-enhancing alternatives relate to both increased enforcement (e.g., vehicle occupancy requirements) and drivers' education (e.g., slower traffic impeding traffic flow). As reported in "HOV Facility Development: A Review of National Trends, Paper No. 02-392," "[e]nforcement continues to be a challenging issue with all HOV systems. Without the proper enforcement of the HOV lane occupancy requirements, the operational effectiveness and efficiency, along with public acceptance suffer" (p. 15). Presently, an unspecified number of SOVs utilize the HOV lane in violation of the California Vehicle Code. Increased enforcement activities of violators (removing SOVs from the HOV) would serve to increase capacity of HOV lanes. As reported in "Out for the Count" (Goodin, Ginger and Wikander, John, Toltrans 2009):

It is essentially impossible to consistently verify the correct number of occupants in vehicles with very high accuracy using visual inspection. Many factors, such as high speeds, window tint, poor lighting conditions caused by bad weather or dawn/dusk conditions significantly impair an officer's ability to 'eyeball' occupants. Rear-occupant detection is especially problematic. Anecdotal reports on accuracy suggest that half the time the officer fails to see rear occupants. In addition to the reliability issue is the concern for law enforcement safety. The need for officers to position themselves at the roadside next to moving traffic creates a potentially dangerous enforcement environment. To reduce the exposure of officers to injury, expensive barriers must be built to protect them while observing and apprehending violators (p. 48).

Absent from the DEIR/S is any discussion of HOV/HOT occupancy enforcement, projections concerning lane violators and how that conduct can impact capacity, the role that design plays in enhancing enforcement and protecting the safety of law enforcement personnel, and where that design is manifest in the proposed project.

As a variation of Alternative 3, no explanation is provided why a two-HOV lane (non-toll) alternative, rather than two "express lanes," was neither identified nor evaluated by the Lead Agency. If, as asserted by the Lead Agency, the existing HOV lane is operating over capacity, a second HOV lane (either inclusive or exclusive of other operational modifications) would appear to allow for an increase in HOV ridership while preserving the fundamental benefits of providing an HOV travel option (e.g., "HOV lanes have the potential to move more people in fewer vehicles, improve the person moving capability and reliability, and efficiently utilize the available roadway infrastructure and transit fleet").

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## 8.0 ADDITIONAL ENVIRONMENTAL CONSIDERATIONS

## 8.1 Land Use

The Lead Agency errors in asserting that land-use impacts relate only to a project's compliance with existing local plans and policies (e.g., "Land use impacts would occur if the proposed project effects would conflict either with General Plan land use designations or zoning, or with applicable environmental plans and policies," p. 3.1.1-20). As specified in the State CEQA Guidelines, "[e]ffects analyzed under CEQA must relate to a physical change" (14 CCR 15358). As such, in the context of CEQA, land use relates to: (1) the existing and potential future physical use of the project site; and (2) the policies, plans, and regulations of both the Lead Agency and other governmental entities governing and defining those uses; and (3) the potential physical changes to existing and reasonably foreseeable future land uses resulting, either directly or indirectly, from the project's implementation.

Although the Lead Agency discusses the proposed action's compliance with the Seal Beach General Plan (deriving conclusions that differ from those of the City), absent from the DEIR/S is a detailed assessment of the proposed action's physical land-use impacts within Seal Beach, focusing specifically upon the following neighborhoods: (1) Leisure World; (2) College Park West; and (3) College Park East.

## 8.2 Air Quality

Motor vehicles emit large quantities of carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), and substances known as mobile source air toxics (MSATs) or toxic air contaminants (TACs), such as benzene, formaldehyde, acetaldehyde, and 1,3-butadiene. Resuspended road dust, tire wear, and brake wear are sources of noncombustion PM emissions. Each of these, along with secondary by-products, such as ozone (O<sub>3</sub>) and secondary aerosols (e.g., nitrates and inorganic and organic acids), can cause adverse effects on human health and the environment.

The EIR must describe, in detail, all the significant effects on the environment of the project. (*Sunnyvale West Neighborhood Association v. City of Sunnyvale City Council*, 2010). "CEQA compels government first to identify the environmental effects of projects, and then to mitigate those adverse effects through the imposition of feasible mitigation measures or through the selection of feasible alternatives. It permits government agencies to approve projects that have an environmentally deleterious effect, but also requires them to justify those choices in light of specific social or economic conditions [Citation]" (*Sierra Club v. State Board of Forestry*, 1994).

As previously noted, implementation of the three build alternatives will increase VMT over the No Build Alternative by between 318,000 and 605,000 miles by 2020 and by between 525,000 and 1,013,000 miles by 2040. As a result, it is immediately evident that the proposed action has both an adverse and significant impact relative to GHG emissions. In order to avoid the obvious, the Lead Agency shirks its statutory and regulatory obligations to both "identify and focus on the significant environmental effects" (14 CCR 15126.2[a]) and to "[d]escribe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance" (14 CCR 15126.2[b]). As indicated in the DEIR/S:

An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith

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effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document (emphasis added) (DEIR/S, Appendix A, p. 5).

Such declaration is only an attempt at subterfuge both with regards to disclosure and the formulation of project alternatives (e.g., mobility options not involving the construction of additional lane-miles). The City believes that such non-disclosure and avoidance strategy is: (1) inconsistent with CEQA (14 CCR 15084.4), resulting in an inadequate environmental analysis; and (2) inconsistent with Statewide efforts to reduce GHG emissions (e.g., reducing carbon footprint below BAU levels).

To the extent that the Lead Agency seeks to assert its consistency with the 2012 RTP/SCS, then it should be equally bound by the mitigation measures contained in the 2012 RTP/SCS PEIR. As indicated herein, relevant GHG-related measures include: (1) "Local jurisdictions can and should reduce GHG emissions by reducing vehicle miles traveled and by increasing or encouraging the use of alternative fuels and transportation technologies" (MM-TR51); (2) "Local jurisdictions can and should reduce VMT-related emissions by encouraging the use of public transit through adoption of new development standards that would require improvements to the transit system and infrastructure, increase safety and accessibility, and provide other incentives" (MM-TR52); and (3) "Local jurisdictions can and should give priority to transportation projects that would contribute to a reduction in vehicle miles traveled per capita, while maintaining economic vitality and sustainability" (MM-TR53) (pp. ES-68 and 69).

As reported in CARB's "Climate Change Proposed Scoping Plan, A Framework for Change" (October 2006), prepared pursuant to Assembly Bill 32 (The California Global Warming Solutions Act of 2006), "California is the fifteenth largest emitter of greenhouse gases on the planet, representing about two percent of the worldwide emissions" (p. 11). By enacting Senate Bill (SB) 97 in 2007, California's lawmakers expressly recognized the need to analyze greenhouse gas (GHG) emissions as a part of the CEQA process and required the Governor's Office of Planning and Research (OPR) and the Natural Resources Agency to adopt guidelines addressing the analysis and mitigation of GHG emissions. In accordance therewith, effective in 2010, lead agencies must analyze: (1) the GHG emissions of proposed projects and must reach a conclusion regarding the significance of those emissions (14 CCR 15084.4); and (2) the potentially significant impacts associated with placing projects in hazardous locations, including locations potentially affected by climate change (14 CCR 15126.2[a]). In addition, when a project's GHG emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions (14 CCR 15126.4[(c)]). CEQA mandates analysis of a proposed project's potential energy use (including transportation-related energy), sources of energy supply, and ways to reduce energy demand, including through the use of efficient transportation alternatives (Appendix F, State CEQA Guidelines); however, as noted in the DEIR/S, the "quantification of the impacts from induced fuel consumption as a result of traffic congestion is beyond the scope of this CIA" (CIA, p. 6-8).

As indicated in the CEQ's "Draft NEPA Guidelines on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions" (February 18, 2010) (Draft NEPA GHG Guidelines),

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citing Calvert Cliffs Coordinating Commission, Inc. v. United States Atomic Energy Commission (1971), the CEQ notes:

Alternatives analysis is an essential element of the NEPA process, both under section 102(2) (C) and in the EA of 'conflicts concerning alternative uses of available resources' under Section 102(2) (E). The requirement of consideration of alternatives is meant to ensure that the agency consider approaches whose adverse environmental effects will be insignificant or at least less significant than those of the proposal. This requirement, like the 'detailed statement' requirement, seeks to ensure that each agency decision maker has before him and takes into proper account all possible approaches to a particular project (including total abandonment of the project) which would alter the environmental impact and the cost-benefit balance. Only in that fashion is it likely that the most intelligent, optimally beneficial decision will ultimately be made' (emphasis added).

As required under Section 21002.1(a) of CEQA: "The purpose of an environmental impact report is to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided" (emphasis added). Section 21100(b) of CEQA states, in part, when an EIR is required, "[t]he environmental impact report shall include a detailed statement setting forth all of the following: (1) All significant effects on the environment of the proposed project. (2) In a separate section: (A) Any significant effects on the environment that cannot be avoided if the project is implemented. (B) Any significant effect on the environment that would be irreversible if the project is implemented" (emphasis added). Section 21100(c) goes on to add: "The report shall also contain a statement briefly indicating the reasons for determining that various effects of the environment of a project are not significant" (emphasis added).

As further required under Section 21081 of CEQA, "no public agency shall approve or carry out a project for which an environmental impact report has been certified which identifies one or more significant effects on the environment that would occur if the project is approved or carried out" unless the agency makes specific findings and finds that the project's specific overriding economic, legal, social, technological, or other benefits outweigh its significant environmental effects. In order to comply with those requirements, the Lead Agency must determine whether the potential direct, indirect, and cumulative impacts of the proposed action will, in fact, produce significant environmental effects and, if so, whether those impacts can be mitigated to a less-than-significant level and present the rationale for those finding (14 CCR 15091(a)).

As indicated in the AQR: "Future greenhouse gas emissions (2020 and 2040) would be greater than existing emissions" (p. 2); however, in what appears directly contrary to both CEQA and NEPA requirements, the DEIR/S states: "It is Caltrans' determination that, in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a determination regarding the significance [or insignificance] of the project's direct impact and its contribution on the cumulative scale to climate change." (p. 4-57). Although the courts have already found that approach to be inconsistent with CEQA requirements, the Lead Agency seeks to perpetuate the myth that it bears no obligation to identify project-related and cumulative thresholds for the projects it undertakes or to reduce those emissions to the maximum extent feasible. In Environmental Council of Sacramento v. California Department of Transportation, in evaluating the adequacy of Caltrans' GHG emissions analysis, the court rejected the argument that absence of a significance threshold

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made it impossible to quantify GHG emissions or determine their significance and set aside the EIR's certification, ruling

Caltrans should have analyzed and discussed whether the Project may have a significant impact on such emissions notwithstanding the Project's compliance with the federal Clean Air Act conformity standards. . . The EIR recognizes the concern that GHG emissions raise for climate change, but concludes that because there is no accepted federal, state, or regional methodology for GHG emission and climate change impact analysis, analyzing the impacts associated with an increase in GHG emissions at the project level is not currently possible [Citation]. However, as Petitioners point out, nothing in the administrative record supports Caltrans' conclusion that it is not possible to quantify the Project's GHG emissions, at which point, Caltrans could make its own evaluation of their significance. While CEQA does not require an agency to foresee the unforeseeable, CEQA does require an agency to use its best efforts to find out and disclose all that it reasonably can [Citation]. Only after thorough investigation may an agency find that a particular impact is too speculative to evaluate and terminate its discussion of the impact [Citation]. Here, there is no evidence in the record that Caltrans performed any investigation whatsoever. This fell short of Caltrans' duty to make a good faith effort to investigate and disclose all that it reasonably can. Caltrans must meaningfully attempt to quantify the Project's potential impacts on GHG emissions and determine their significance, or at the very least explain what steps it has taken that show such impacts are too speculative for evaluation (Minute Order, pp. 8, 10, and 11).

Similarly, in Center for Biological Diversity v. City of Desert Hot Springs, Riverside County Case No. RIC 464585 (August 6, 2008), the court held that an environmental impact report (EIR) for a proposed residential and commercial development was insufficient because it failed to make a "meaningful attempt" to analyze the project's effects on global warming. The court rejected the lead agency's argument that the absence of Statewide CEQA significance thresholds or guidelines for GHG emissions exonerated the agency of its duty to analyze such emissions in CEQA documents. Quoting from the Ninth Circuit's statement in Center for Biological Diversity v. National Highway Traffic Safety Administration (2007), the federal court stated that "[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct." The court emphasized that even though it could be true that projects' effects on global warming are too speculative in the absence of guidance from the CARB or USEPA, the agency could not simply assert this speculation without first making some attempt to determine whether the project would have a significant effect on climate change. Drawing from those cases, Caltrans' failure to determine the significance of GHG emissions has rendered the DEIR/S analysis inadequate.

The Lead Agency alleges that "NEPA does not require that a determination of significant impacts be stated in the environmental documents" (p. 4-1). However, as indicated under the CEQ Regulations, the significance of an identified effect must be determined based on both context and intensity. As indicated in Section 1508.27(a) of the CEQ Regulations, "the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action." Under NEPA, intensity is evaluated by considering the degree to which: (1) a proposed action will affect public health or safety; (2) the effects on the environment are likely to be highly controversial; (3) the possible effects on the human environment are highly uncertain or pose unique or unknown risks; (4) the action may

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establish a precedent for future actions with significant effects, or represent a decision in principle about a future consideration; (5) the action is related to other actions with individually insignificant but cumulatively significant impacts; and (6) the action may adversely affect an endangered or threatened species or its habitat (Center for Biological Diversity v. National Highway Traffic Safety Administration). In recognition of those factors (e.g., health and safety effects, level of controversy, and unknown risk), potential impacts attributable to project-related and cumulative GHG emissions would be deemed significant under NEPA.

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Despite substantial evidence to the contrary, this same failing also holds true with regards to the assessment of potential health risks. As indicated in the AQR, "it is not possible to make a determination of whether any of the alternatives would have 'significant adverse impacts on the human environment'" (p. 77). Based only upon a "qualitative analysis, ignoring the existence of abutting single-family properties within Seal Beach, the Lead Agency asserts that "[a] A qualitative diesel particulate matter was completed for the proposed project. It was determined that while diesel exhaust may pose potential cancer risks to receptors spending time on or near high risk diesel particulate matter facilities, most receptors short term exposure would only cause minimal harm" (AQR, p. 2).

Health risks are not examined on a "majority rules" basis. Regulations promulgated by the California Health and Welfare Agency, under Proposition 65, define a significant cancer risk as any risk exceeding ten in one million ( $10 \times 10^{-6}$ ). As stipulated in the SCAQMD's "CEQA Air Quality Handbook" (April 1993), a project would normally be deemed to be significant if it were to emit carcinogenic or toxic air contaminants (TACs) that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million (pp. 6-2 and 6-3).

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The AQR notes that "[t]he SCAQMD has jurisdiction over an area of 10,743 square miles, consisting of Orange County, the non-desert portions of Los Angeles, Riverside, and San Bernardino counties; and the Riverside County portion of the Salton Sea Air Basin and Mojave Desert Air Basin" (emphasis added) (p. 44). As indicated in separate correspondence submitted to Seal Beach in response to the City's release of a "Notice of Preparation of a CEQA Document for the Department of Water and Power Specific Plan Amendment" (SCH No. 2011061018), in correspondence dated June 29, 2011, the SCAQMD make the following declaration: "The SCAQMD adopted its California Environmental Quality Act (CEQA) Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis" (p. 1). It has to be assumed that the SCAQMD has presented the Department with a similar declaration.

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In April 2005, the CARB published the "Air Quality and Land Use Handbook" (CARB Handbook) which included recommended minimum separation distances serving as a general guide for considering health effects associated with siting sensitive receptors in proximity to facilities emitting TACs. The CARB's recommended minimum separation distance between potentially incompatible land uses is presented, in part, in Table 16 California Air Resources Board Recommendations on Siting Sensitive Land Uses).

To characterize health risks posed by TACs in the SCAB, the SCAQMD conducted the "Multiple Air Toxics Exposure Study, Final Report" (March 2000) (MATES-II). The MATES-II study concluded that the Basinwide average cancer risk was about 1,400 in one million ( $1,400 \times 10^{-6}$ ) (assuming continuous exposure 24-hours per day for a 70-year lifetime) (Source: SCAQMD, Final 2007 Air Quality Management Plan, June 1, 2007). Mobile sources (e.g., automobiles,

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trucks, trains, ships, aircraft) were reported to be the largest contributors and about 70 percent of the cancer risk was attributed to diesel PM, another 20 percent was attributed to other TACs associated with mobile sources (including benzene, 1,3-butadiene, and formaldehyde). The remaining 10 percent was attributed to stationary sources (e.g., industry, certain businesses such as dry cleaners and chrome plating operations). In the MATES-II study, the SCAQMD found that cancer risk across the SCAB ranged from about 1,120 ( $1,120 \times 10^{-6}$ ) to 1,740 in one million ( $1,740 \times 10^{-6}$ ) among eight fixed sites. In 2008, the SCAQMD's "Multiple Air Toxics Exposure Study" (MATES-III) found that the Basinwide cancer risk was about 1,200 in one million ( $1,200 \times 10^{-6}$ ), with TACs from mobile sources accounting for 94 percent of this risk on average.

Table 16  
California Air Resources Board Recommendations on Siting Sensitive Land Uses

Source Category	Advisory Recommendations	Range of Cancer Risks <sup>2</sup>	Summary of Basis for Advisory Recommendations
Freeway and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roadway with 100,000 vehicles/day, or rural roadway with 50,000 vehicles/day.	300-1,700	The additional non-cancer health risk attributable to proximity was seen within 1,000 feet and was strongest within 300 feet. Studies show about 70% drop off in PM pollution levels at 500 feet.

## Notes:

1. For cancer health effects, risk is expressed as an estimate of the increased chances of getting cancer due to facility emissions over a 70-year lifetime. This increase in risk is expressed as chances in a million.
2. The estimated cancer risks are a function of proximity to the specific category and were calculated independent of the regional health risk for air pollution. For example, the estimated regional cancer risk from air toxics in the Los Angeles Region (SCAB) is approximately 1,000 in one million ( $1,000 \times 10^{-6}$ ).

Source: California Air Resources Board, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005, Tables 1-1 and 1-2, pp. 4, 6 and 7.

As indicated in Appendix A (CEQA Checklist) in the DEIR/S, the proposed action would be deemed to produce a significant environmental effect if the project were to "[e]mit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school" (p. 5); and/or (2) "cause substantial adverse effects on human beings, either directly or indirectly" (p. 10). Although the "CEQA Checklist" concludes that "effects on human beings" would constitute a "potentially significant impact," neither air quality nor human health effects were explicitly identified as a basis for that conclusion. Instead of assessing potential project-related and cumulative health risks relative to identified threshold of significant standards, the Department states:

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action. . . . Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits,

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such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis. . . . Because of the uncertainties outlined above, a reliable quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment." (pp. 74, 76, and 77).

By failing to determine significance and asserting, as its rationale, "unavailable or incomplete information," the Lead Agency is violating the CEQ Regulations. Citing Section 1502.22 therein:

When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking. (a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement. (b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement: (1) a statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluate reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purpose of this section, "reasonably foreseeable" includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

As reported in the National Research Council's "Surface Transportation Environmental Research: A Long-Term Strategy, Special Report 268" (2002): "Fuel burning due to transportation activities, whether under congested or uncongested conditions, has the potential to increase the risk of death from respiratory and cardiovascular disease; raise the risk of developing certain chronic diseases [including cancer, chronic bronchitis; and, according to very recent evidence, asthma]; aggravate various existing chronic conditions; and lead to acute cardiopulmonary symptoms, such as cough, a runny nose, and other signs of a cold. Burning gasoline still leads to significant emissions of volatile organic compounds (VOCs) (some of which are carcinogenic), CO, nitrogen oxide (NOx), and particulate matter" (p. 34).

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Heavily-travelled roadways are a key contributor to diesel particulate matter (diesel PM). MATES-III concluded that 84 percent of the total cancer risk from TACs within the region comes from diesel PM. High volume roadway emissions are also associated with higher levels of ultrafine particles which are associated with adverse health impacts. Although there is no federal or State ambient air quality standard for ultrafine particles, based on the growing knowledge of their potential health risks, critical assessment of projects that increase exposure of those pollutants by sensitive receptors needs to be conducted.

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The following relevant studies, included in Attachment F herein, address the health risks attributable to ultrafine particles are included herein and made a part of the City's comments: (1) Grahame, Thomas J. and Schlesinger, Richard B. Cardiovascular Health and Particulate Vehicular Emissions: A Critical Evaluation of the Evidence, Air Quality, Atmosphere and Health, 3:3-27, 2010; (2) Knibbs, Luke D., Cole-Hunter, Tom, and Morawska, Lidia, A Review of Commuter Exposure to Ultrafine Particles and its Health Effects, Atmospheric Environment 25:2611-2622, 2011; (3) Zhu, Yifang et al., Study of Ultrafine Particles Near a Major Highway with Heavy-Duty Diesel Traffic, Atmospheric Environment 36:4323-4335, 2002; (4) Hu, Shishan et al., A Wide Area of Air Pollutant Impact Downwind of a Freeway during Pre-Sunrise Hours, Atmospheric Environment 43:2541-2549, 2009; (5) Araujo, Jesus A. et al., Ambient Particulate Pollutants in the Ultrafine Range Promote Early Atherosclerosis and Systemic Oxidative Stress, Circulation Research, March 14, 2009, p. 589; (6) Li, Ning et al., Ultrafine Particulate Pollutants Induce Oxidative Stress and Mitochondrial Damage, Environmental Health Perspectives, Vol. 111, No. 4, April 2003, p. 455; (7) Delfino, Ralph J. et al., Association of Biomarkers of Systemic Inflammation with Organic Components and Source in Quasi-Ultrafine Particles, Environmental Health Perspectives, Vol. 118, No. 6, June 2010, p. 756; and (8) Hankey, Steve, Marshall, Julian D., and Brauer, Michael, Health Impacts of the Built Environment: Within-Urban Variability in Physical Inactivity, Air Pollution, and Ischemic Heart Disease Mortality, Environmental Health Perspectives, Vol. 120, No. 2, February 2012, p. 247.

As indicated in "Near Highway Pollutants in Motor Vehicle Exhaust: A Review of Epidemiologic Evidence of Cardiac and Pulmonary Health Risks" Brugge, Doug, et al, Environmental Health 6:23, 2007), included in Attachment G herein:

There is growing evidence of a distinct set of freshly-emitted air pollutants downwind from major highways, motorways, and freeways that include elevated levels of ultrafine particulates (UFP), black carbon (BC), oxides of nitrogen (NOx), and carbon monoxide (CO). People living or otherwise spending substantial time within about 200 m of highways are exposed to these pollutants more so than persons living at a greater distance, even compared to living on busy urban streets. Evidence of the health hazards of these pollutants arises from studies that assess proximity to highways, actual exposure to the pollutants, or both. Taken as a whole, the health studies show elevated risk for development of asthma and reduced lung function in children who live near major highways. Studies of particulate matter (PM) that show associations with cardiac and pulmonary mortality also appear to indicate increasing risk as smaller geographic areas are studied, suggesting localized sources that likely include major highways. Although less work has tested the association between lung cancer and highways, the existing studies suggest an association as well. While the evidence is substantial for a link between near-highway exposures and adverse health outcomes, considerable work remains to understand the exact nature and magnitude of the risks. . . .The plausibility of near-highway pollution causing lung cancer is bolstered by the presence of known carcinogens in diesel PM. The US EPA

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has concluded after reviewing the literature that diesel exhaust is 'likely to be carcinogenic to humans by inhalation.'

As further indicated in "Effects of Exposure to Traffic on Lung Development from 10 to 18 Years of Age: A Cohort Study" (Gauderman, James W., et al, Lancet, 2006), included in Attachment H herein, "Reduced lung-function growth was independently associated with both freeway distance and with regional air pollution. Statistically significant joint models of regional pollution with distance to freeway were seen for nitrogen dioxide, acid vapour, elemental carbon, and particulate matter with aerodynamic diameter less than 10 µm and less than 2.5 µm. . . This study shows that residential proximity to freeway traffic is associated with substantial deficits in lung-function development in children."

As indicated in the I-710 Corridor DEIR/S, in summarizing written correspondence submitted by the USEPA to Caltrans, the document states, in part:

Executive Order 13045 on Children's Health and Safety directs that each Federal agency shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall ensure that its policies, programs, activities, and standards address these risks. Analysis and disclosure of these potential effects under NEPA is necessary because some physiological and behavioral traits of children render them more susceptible and vulnerable than adults to health and safety risks. Children may be more highly exposed to contaminants because they generally eat more food, drink more water, and have higher inhalation rates relative to their size. Also, children's normal activities, such as putting their hands in their mouths or playing on the ground, can result in higher exposures to contaminants as compared with adults. Children may be more vulnerable to the toxic effects of contaminants because their bodies and systems are not fully developed and their growing organs are more easily harmed. Based on current EPA policy and guidance, an analysis of impacts to children should be included in a NEPA analysis if there is a possibility of disproportionate impact on children related to the proposed action. EPA views childhood as a sequence of life stages, from conception through fetal development, infancy, and adolescence. Therefore, exposures to children at each life stage, as well as pregnant and nursing women, are relevant and should be considered when addressing health and safety risks for children. Because children can be more susceptible to mobile source air pollution and generally experience higher exposures to air pollution than adults, we [USEPA] recommend that the Draft EIR/EIS further address the potential direct, indirect, and cumulative impacts of the proposed project on children's health, including consideration of prenatal exposures (exposures that may be experienced by pregnant women) (Appendix J, pp. 21-22).

Assess the project's impact to children's environmental health by incorporating child-specific exposure factors using EPA's Child Specific Exposure Factors Handbook, 2008, or an equivalent source recommended by the State of California, in the analysis of exposures at schools, daycares, and parks. In addition, we recommend using the recommended age groupings provided in EPA's Guidance on Selecting Age Groups for Monitoring and Assessing Childhood Exposures to Environmental Contaminants, 2005. The document describes a set of age groupings that can be used, and when necessary adapted, for purposes of designing monitoring studies and conducting risk assessments focused on children (Appendix J, p. 24).

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Research has demonstrated that traffic-related air pollution can exacerbate asthma and may be associated with the onset of childhood asthma. In the EPA Region 9 letter sent to the California Department of Transportation District 7 on August 20, 2010, EPA recommended that the air quality and health risk assessment protocol consider existing asthma rates and asthma severity among children and the general community within the project area. EPA recommended that the Risk Characterization, Cumulative Impacts Analysis, and EJ Analysis identify impacts of the proposed project on asthma rates and severity in children near the project site and should quantify the costs associated with these impacts, to the extent feasible (Appendix J, p. 25).

The Seal Beach Tennis Center, Blue Bell Park and Almond Park are all located in close proximity to the I-405 Freeway ROW, as well as the College Park East and College Park West residential neighborhoods. Although large concentrations of children exist in each of those areas, absent from the DEIR/S is any analysis of the proposed project's impacts on either children's health, including prenatal exposure.

The DEIR/S indicates that, with regards to the proposed action, written correspondence was received from the USEPA (i.e., "EPA commented on water and air quality, environmental justice issues, and suggested a refinement of the project's scope, purpose and need, and explanation of the range of alternatives," p. 5-13); however, neither a copy of nor further information concerning the USEPA's correspondence submitted in response to the NOP/NOI is presented therein. The City requests that a copy of both the USEPA's correspondence addressing the proposed action and separately addressing the I-710 Corridor DEIR/S be included in the Lead Agency's written response to these comments and, with regards to the proposed action, that the Department specifically respond to each of the items and recommendations presented therein. In addition, the Department should explain why the USEPA's comments on the I-705 Corridor Project would not have equal relevancy to the CEQA and NEPA assessment of the I-405 Freeway improvement project? Why was the level of analyses (e.g., health risk assessment) included in the DEIR/S and in the I-705 Corridor DEIR/S not reasonably consistent?

If, as the Lead Agency asserts, due to higher vehicle speeds under the build alternatives, "[r]egional emissions would be less than baseline conditions in years 2020 and 2040" (AQR, p. 1), then the converse must also be true (i.e., reductions in speed due to bottlenecks would effectively increase the concentration of air pollutants and the exposure of near source receptors). Because the Lead Agency ignores the reality of what happens directly to the north of the identified corridor, absent from the DEIR/S is any discussion of the merging of northbound traffic from a widened freeway to a link with fewer HOV and GP lanes and the bottleneck that will most certainly result therefrom.

As illustrated in Figures ES-1 and 1.3-1 (pp. ES-2 and 1-9) in the Traffic Study, travelling northbound on the I-405 Freeway, north of Seal Beach Boulevard, there are seven GP lanes and one HOV lane (total of seven lanes). As proposed, under Alternative 3, there will be seven GP lanes, one auxiliary lane, and two HOV/HOT lanes (total of ten lanes). As a result of that bottleneck, the diminishment of travel lanes will add to congestion in that area and cause northbound traffic to slow in proximity to College Park East. Under the Lead Agency's own set of assumptions, mobile source emissions adjacent to that residential area will increase. Since post-project congestion will likely be worse in the vicinity of Seal Beach Boulevard, localized air quality impacts will be greater under the build scenarios than under the No Build Alternative.

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Independent of the Lead Agency's assertion that increased vehicle speeds reduce idling emissions (e.g., "Regional emissions would be less than baseline conditions in years 2020 and 2040. This decrease is due to higher vehicle speeds under the build alternatives," AQR, p. 1), the projected increase in both traffic volumes along the I-405 Freeway and project-related VMT results, directly and/or indirectly, in increased exposure to sensitive near-freeway receptors to additional mobile source emissions. For example, by manipulating vehicle throughput to maintain travel speeds, trucks and other commercial vehicles transporting perishable items and/or otherwise dependent on time are being induced to utilize the proposed HOT lanes. Because "[d]iesel trucks contribute more than half of the total diesel combustion sources" (DEIR/S, p. 3.2.6-50), unaccounted for increases in toxic air contaminants (TACs) will likely be the consequence.

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8.3 Noise and Vibration

Absent from the DEIR/S is any discussion of noise vibration, both as it may relate to construction impacts and freeway operations. A number of City residents located in proximity to the I-405 Freeway have indicated that vibration is an on-going problem which is likely only to be further exacerbated as a result of the proposed action.

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As indicated in DEIR/S, with regards to "exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels" (Appendix A, p. 7), the Lead Agency states that the proposed action would generate a "less than significant impact" (ibid.). No analysis (including the identification of reasonable threshold of significance criteria) is, however, to support that conclusion.

8.4 Environmental Justice

As reported in the Los Angeles Times on July 1, 2012 ("O.C. Tollways to Stop Taking Cash"), in an article about toll roads in Orange County, the author (Mike Reicher) notes:

[A] rate hike takes effect Sunday. Cash tolls will increase 25 to 50 cents at most toll plazas and FasTrak tolls will increase 5% to 10%. Rate hikes depend on the time of day. The changes, which will eliminate about 100 tollbooth jobs, comes about a year after the 73 toll road project restructured its roughly \$2.1 billion in debt. An agreement with bondholders requires the agency to raise tolls whenever feasible. As ridership continues to fall below projections, leaders are looking for long-term money-saving measures. Without tollbooths, even casual users will have to register beforehand or else pay a fine for using the public road. Cameras will capture license plate numbers, and motorists who have set up pre-paid accounts registered to the photographed number will be billed. . . Drivers who use the toll roads but have not registered their license plate numbers will receive a violation unless they pay the toll online within 48 hours. . . The fine is currently \$57.50, plus the toll amount. . . The San Joaquin Hills agency has increased toll rates 12 times since fiscal year 1997 (emphasis added) (p. A-27).

As indicated in FHWA's "Income-Based Equity Impacts of Congestion Pricing, A Primer" (December 2008): "Equity concerns with regard to income have often been raised about congestion pricing. The benefits of congestion pricing may not be distributed equally among all users. High-income users are more likely to remain on the highway, pay the congestion fee, and benefit from a faster trip. Low-income users may be worse off if they choose other less-

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expensive times, routes, or modes. When public use of infrastructure assets is deliberately made more expensive at certain times, low-income people and those concerned about their welfare may raise legitimate concerns about equity" (p. 4).

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SCAG notes that "[b]ecause congestion pricing imposes a cost on something that was previously considered 'free,' it can raise issues of equity. Some say that those with lower incomes would pay a higher percentage of their income or be priced out of driving" (Express Travel Choices Study, Frequently Asked Questions, January 13, 2011, p. 5). As further indicated therein: "A paper by the Rand Corporation and Volpe National Transportation Systems Center (2007) indicated that household surveys suggest that rush-hour travelers who travel in the busier direction - and thus are more likely to pay congestion charges - are the most affluent group within the larger category of street and highway users" (p. 7).

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Referencing FHWA's "Environmental Justice Emerging Trends and Best Practices Guidebook" (November 1, 2011): "While road pricing has the potential to meet the needs of disadvantaged communities, pricing strategies also have the potential to violate environmental justice principles if not implemented with thorough consideration of equity impacts. The perceived 'cost' of a toll or congestion charge in proportion to income is higher for a low-income traveler. In the absence of alternative free routes that could be used by these travelers, concerns regarding monetary egalitarianism could arise because low-income people may continue to be stuck in traffic while the wealthy are able to pay for and use the priced roads or lanes. For this reason, high-occupancy toll (HOT) lanes, implemented in several regions by introducing pricing on former high-occupancy vehicle (HOV) lanes, sometimes encounter criticism as 'Lexus Lanes' that cater to the wealthy and impose unfair burdens on the poor. . . In addition to the charge itself, low-income populations can sometimes be excluded from accessing the technology required to use priced roads. This occurs because of the need for drivers to own transponders that are typically purchased in advance. Transponders must also be linked to reliable bank or credit card accounts that can be used to deduct charges; at least 20 percent of U.S. households do not have credit cards and 10 percent do not have bank accounts" (pp. 56-57).

As further indicated therein: "A region that is considering implementation of road pricing should undertake studies to measure and assess potential impacts on disadvantaged communities at an early stage in the planning process. Not only must this information be shared during communications with decision makers and the public, but it is also important for purposes of NEPA documentation during planning and environmental review. Also, lessons regarding the acceptability of road pricing strategies show that it is important to reference data on equity impacts of successful road pricing programs during public outreach" (p. 61). "There are some reports from San Diego and Minneapolis that high-income travelers are more likely to own transponders, use HOT lanes, and benefit from faster trips than low-income travelers. However, with reinvestment of revenues in significantly improved transit services and other travel alternatives, those effects have been mitigated to some extent" (p. 66).

As indicated in the "California HOV/Express Lane Business Plan," "[t]here is an impression by the general public, as experienced by regional transportation agencies that have been planning and designing express lanes within existing capacity, that express lanes reinforce social inequities for users. Express lanes are perceived as 'Lexus lanes' that are only affordable to motorists with high incomes. . . It is important to address perception and engage in public communication (including surveys) consistently and on a large scale in order to enable future development of express lanes in California" (pp. 20-21).

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Although the DEIR/S itself makes reference to the "California HOV/Express Lane Business Plan" (p. S-38), absent from the DEIR/S is any discussion or analysis of environmental justice, including "studies to measure and assess potential impacts on disadvantaged communities."

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Presidential Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (59 Fed. Reg. 7529 [1994]) provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." In the memorandum to heads of departments and agencies that accompanied Executive Order 12898 (EO 12898), the President specifically recognized the importance of procedures under NEPA for identifying and addressing environmental justice concerns. The memorandum states that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by [NEPA]."

EO 12898: (1) requires the development of agency-specific environmental justice strategies; (2) recognizes the importance of research, data collection, and analysis, particularly with respect to multiple and cumulative exposures to environmental hazards for low-income populations, minority populations, and Indian tribes; (3) provides for agencies to collect, maintain, and analyze information on patterns of subsistence consumption of fish, vegetation, or wildlife; and (4) requires agencies to work to ensure effective public participation and access to information. In addition, the memorandum accompanying the EO 12898 identifies the following four important ways to consider environmental justice under NEPA: (1) each Federal agency should analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA; (2) mitigation measures identified as part of an environmental assessment (EA), a finding of no significant impact (FONSI), an environmental impact statement (EIS), or a record of decision (ROD), should, whenever feasible, address significant and adverse environmental effects of proposed Federal actions on minority populations, low-income populations, and Indian tribes; (3) each Federal agency must provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices; and (4) review of NEPA compliance must ensure that the lead agency preparing NEPA analyses and documentation has appropriately analyzed environmental effects on minority populations, low-income populations, or Indian tribes, including human health, social, and economic effects.

In April 1997, the DOT issued "DOT Order on Environmental Justice to Address Environmental Justice in Minority Populations and Low-Income Populations" (DOT Order 5610.2) to summarize and expand upon the requirements of EO 12898. As specified therein: "It is the policy of DOT to promote the principles of environmental justice (as embodied in the Executive Order) through the incorporation of those principles in all DOT programs, policies, and activities. This will be done by fully considering environmental justice principles throughout planning and decision-making processes in the development of programs, policies, and activities, using the principles of the National Environmental Policy Act of 1969 (NEPA), Title VI of the Civil Rights Act of 1964 (Title VI), the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (URA), the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and other DOT statutes, regulations and guidance that address or affect infrastructure planning and

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decisionmaking; social, economic, or environmental matters; public health; and public involvement." As further indicated therein: "Statutes governing DOT operations will be administered so as to identify and avoid discrimination and avoid disproportionately high and adverse effects on minority populations and low-income populations by: (1) identifying and evaluating environmental, public health, and interrelated social and economic effects of DOT programs, policies and activities, (2) proposing measures to avoid, minimize and/or mitigate disproportionately high and adverse environmental and public health effects and interrelated social and economic effects, and providing offsetting benefits and opportunities to enhance communities, neighborhoods, and individuals affected by DOT programs, policies and activities, where permitted by law and consistent with the Executive Order, (3) considering alternatives to proposed programs, policies, and activities, where such alternatives would result in avoiding and/or minimizing disproportionately high and adverse human health or environmental impacts, consistent with the Executive Order, and (4) eliciting public involvement opportunities and considering the results thereof, including soliciting input from affected minority and low-income populations in considering alternatives."

In December 1998, the FHWA issued "FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (DOT Order 6640.23) requiring the FHWA to implement the principles of the DOT Order 5610.2 and EO 12898 by incorporating environmental justice principles in all FHWA programs, policies and activities. The following definitions are provided therein: (1) "low-income" means a household income at or below the Department of Health and Human Services poverty guidelines; (2) "low-income population" means any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons who would be similarly affected by a proposed FHWA program, policy, or activity; (3) "adverse effects" means the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of FHWA programs, policies, or activities; (4) "disproportionately high and adverse effect on minority and low-income populations" means an adverse effect that: (a) is predominately borne by a minority population and/or a low-income population; or (b) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non low-income population; and (5) "programs, policies, and/or activities" means all projects, programs, policies, and activities that affect human health or the environment, and that are undertaken, funded, or approved by FHWA. DOT and FHWA orders identify NEPA as an existing requirement, through which environmental justice should be considered for transportation projects with federal involvement.

As reported in the USEPA's "Opportunities to Improve Air Quality through Transportation Pricing Programs" (September 1997): "Minority groups are often disproportionately affected by the inequity of the current transportation system because they tend to represent a relatively large percentage of the lower income population. . .Tolls, fees and taxes will affect different income

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groups in different ways. Under a pricing scheme, those with high-income enjoy the benefits of less congested roads (e.g., shorter commutes) and may only need to eliminate 'discretionary' driving. While lower-income individuals tend to drive (and park) less than higher-income individuals, transportation pricing measures such as tolls, fees, and taxes have a greater impact for low-income groups if they do have to pay them. Low-income people may be forced to forgo 'necessary' trips. Those most likely to be hurt are those who are employed in 9-to-5 jobs with inflexible schedules" (pp. 83-85).

The Urban Land Institute, in "Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions" (July 2009) notes that "[l]ower income groups spend as much as four times more than higher income groups of their income on transportation" (Executive Summary, p. 8).

As indicated in Caltrans' "California Transportation Plan 2025," in relationship to transportation, "social equity" is defined as "ensuring that no group receives disproportionate burdens or benefits from transportation investment decisions" (pp. 4 and A-50). However, as noted in the DEIR/S, "Alternative 3 would allow motorists to choose between congestion in the GP lanes and high-speed travel with reliable trip time in the Express Lanes in exchange for payment of a toll" (Table 3.1.1-1, p. 3.1.1-30). As a result, under Alternative 3 a disparity is created. "High-speed travel" and "reliable trip time" shall only be available to those "groups" (e.g., economically advantaged) able to pay the toll. Conversely, those groups (e.g., economically disadvantaged) unable to pay the toll shall only receive "congestion."

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In acknowledging the potentially significant environmental justice impacts resulting from the implementation of I-10 and I-110 High Occupancy Toll lanes for the LA County Congestion Reduction Demonstration Project, the LACMTA, as a responsible agency under CEQA, deemed the mitigation measures contained in "Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact – The Interstate 10 (San Bernardino Freeway/EI Monte Busway) High Occupancy Toll Lanes Project, SCH No. 2009061060" (April 2010) and "Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact – The Interstate 110 (Harbor Freeway/Transbay) High Occupancy Toll Lanes Project, SCH No. 2009061059" (April 2010) to be inadequate and adopted the following additional "mitigation measures": (1) "All revenue generated as a result of collecting tolls from SOV will be reinvested into the corridor where generated. This includes transit services and operations and maintenance of the facility"; (2) "As a part of the project's operational plan, LACMTA will offer a toll credit in the form of a Low-Income Commuter Discount that will credit the accounts of qualifying low income households \$25 for account set-up/establishment fees that can be applied to the transponder deposit or pre-paid toll balance, and waive the monthly non-use fee for qualifying low income households"; and (3) "Throughout project construction, coordination will occur with local emergency providers to keep them informed of the project construction schedule and any detour routes so as to avoid or minimize any impacts to emergency service response time" (Ad Hoc Congestion Pricing Committee, I-10 and I-110 Hot Lanes California Environmental Quality Act Findings of Responsible Agency, July 14, 2010, pp. 1-2). Although the long-term effectiveness and consequences of these measures remains uncertain, the LACMTA's acknowledgement of the existence of potentially significant environmental justice impacts on proximal HOT lane projects in the southern California area suggests a disparity in the manner in which like-kind projects are assessed and evaluated.

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**8.5 Other Considerations**

Federal transportation programs are currently funded under SAFETEA-LU, as enacted in August 2005. It is the City's understanding that the current federal transportation funding bill is set to expire on June 30, 2012. In response, federal lawmakers are presently discussing the prospects of new legislation that could potentially affect the environmental review of many highway, bridge and other surface transportation projects. The United States House of Representatives (House) and United States Senate (Senate) passed differing transportation bills earlier this year and has appointed a committee of legislators to reconcile the differences between those two bills.

House Resolution (H.R.) 4338 contains a series of provisions intended to streamline and reduce the review of transportation infrastructure projects under NEPA. In its declaration of policy, the legislation states: "[I]t is in the national interest to expedite the delivery of surface transportation projects by substantially reducing the average length of the environmental review process" (Section 602). The bill provides that if NEPA review is not completed with 270 days of the notice of project initiation, "the project shall be considered to have no significant impact to the human environment for purposes of the National Environmental Policy Act" (Section 618). The bill further limits the alternatives required to be considered for transportation projects and states that federal funding of less than \$10,000,000, or less than 15 percent of a transportation project's anticipated costs, shall not trigger NEPA review (Section 608). The bill would authorize certain pre-construction activities prior to the completion of the NEPA process. Based on the significant and potentially significant impacts of the proposed action, implementation of any blanket timeframe should not be deemed to be retroactive to this project. Because of its potential project-specific significant, the Lead Agency should discuss the potential impact of this proposed legislation (or subsequent versions thereon) on the proposed project.

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Similarly, although Senate Bill 1813 does not include the same broad changes to CEQA, it would require agencies with permitting authority over transportation projects to render decisions within 180 days of a completed application or the lead agency's final determination under NEPA, whichever is later (Section 1313[6]). Agencies that miss that deadline could be required to pay penalty fees to the agency charged with rendering an ultimate decision on the underlying project (Ibid.). Like the House bill would authorize certain pre-construction activities prior to the completion of the NEPA process. Because of its potential project-specific significant, the Lead Agency should discuss the potential impact of this proposed legislation (or subsequent versions thereon) on the proposed project.

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As reported in a report prepared by the Brookings Institute and University of California Berkeley, entitled "The Effect of Government Highway Spending on Road Users' Congestion Costs, Final Report to the Federal Highway Administration" (October 2004), the authors (Clifford Winston and Ashley Langer) concluded:

[W]e estimate that one dollar of highway spending in the last year of our sample, 1996, reduced motorists' congestion costs only 3.3 cents in that year (2000 dollars). Note that this benefit is not an ongoing return, but only applies to the year in which spending occurred.<sup>17</sup> Although highway spending serves many purposes, policymakers frequently cite reducing congestion as among the most important. Thus, our estimate seriously questions the cost-effectiveness of current spending priorities if policymakers wish to achieve this goal. As noted, we did not include several variables

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in the model that affected congestion costs but were arguably affected to some extent by highway spending. If we included any of these variables in the model, the effect of highway spending on congestion costs would be even lower (pp. 13-14).

**9.0 DRAFT ENVIRONMENTAL IMPACT REPORT/STATEMENT**

The following comments are presented in response to statements and other information presented in specific sections of the DEIR/S. For the purpose of brevity, comments which have been previously raised by the City with regards to the Lead Agency's environmental analysis are not again repeated herein. Time and other constraints have prevented the City from reviewing the totality of the DEIR/S to a similar degree. As a result, the comments presented herein primarily focus on certain topical issues deemed by the City to have the greatest potential environmental effect. The City's independent election not to reference and describe some of the project's potential impacts and document's potential defects (e.g., discussion of redevelopment agencies and agency plans when redevelopment agency activities have ceased in California) should not be construed as Seal Beach's concurrence with the information and analysis presented therein. The City reserves the right to submit additional comments concerning the proposed action and its potential environmental impacts and to avail itself of other relevant comments as may be submitted to the Lead Agency by other stakeholders.

The City believes that there may exist some confusion as to where, how, and to which agency and/or entity written comments on the DEIR/S should be submitted. For example, the front matter of the document identifies Caltrans' address as "3347 Michelson Drive, Suite 100, Irvine, CA 92612-1692" but states that "comments via postal mail" shall be delivered to "2201 Dupont Drive, Irvine, CA 92612." In contrast, "comments via email" shall be sent not to Caltrans but to "404.dedcomments.Parsons@parsons.com." Since "Parsons" is neither a governmental agency nor appears to be contracted directly by the Lead Agency, it is unclear why comments would be delivered to a representative of the "project sponsor" rather than delivery to the Lead Agency. Because of this confusion, the City requests that the Lead Agency accept any written comments received within a reasonable time period extending beyond July 17, 2012 that may have been delivered to Caltrans, to the OCTA, and/or to Parsons, including those that may have been transmitted to addresses other than those specified. In addition, an explanation is requested as to why the Lead Agency is specifying that comments should be delivered to "Parsons" in lieu of Caltrans and what role "Parsons" will play or has played in the preparation of responses to those comments.

**9.1 Traffic and Transportation/Pedestrian and Bicycle Facilities****9.1.1 Traffic Study**

The following additional comments are submitted in response to the information presented in the "Traffic Study – San Diego Freeway (I-405) Improvement Project SR-73 to I-605, Orange and Los Angeles Counties" (Caltrans, May 2011). Because there is no reference to or discussion of SOVs in the Traffic Study, potential capacity and other traffic-related impacts related to or resulting from the use of the HOV lane by single-occupant vehicles has not been addressed. As a result, the traffic analysis does not adequately address the proposed action.

- **Page ES-3 (Traffic Study).** A basis of the traffic study is throughput, which is "the number of vehicles able to pass a fixed point along the corridor during the greatest hour of demand." This analysis approach focuses on vehicles passing particular points on the

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freeway but ignores a more critical measure of a transportation improvement, movement of person trips, particularly given the region's overburdened transportation system. Vehicle throughput does not provide complete disclosure of transportation impacts and mitigations (e.g., accommodation of added SOVs can actually result in impacts to the overall transportation system by reducing overall mobility). The Lead Agency's focus on throughput analysis results in a failure to consider other related transportation and environmental impacts.

- **Page ES-4 (Traffic Study).** Figure ES-2 shows added "throughput capacity" for Alternative 3 but the "express lanes" will likely cause MOVs to be exchanged for SOVs. Given the portion of "throughput capacity" associated with the "2 Express" lanes (as shown in Figure ES-2), there may be significant shifts from MOVs to SOVs, resulting in a net decrease in mobility, and an overall increase in environmental impacts (e.g., increased air quality impacts, reductions in the number of persons being served even though added vehicles are being accommodated, added traffic impacts to other areas caused by former carpool travelers now driving alone).

As indicated in the FHWA's "Consideration for High Occupancy Vehicle Lane to High Occupancy Toll Lane Conversion Guidebook" (June 2007) (HOV2HOT Conversion Guidebook), "[i]t is critical to fully understand the impact of creating added capacity to HOV lanes and potentially creating unexpected, new congestion hot spots" (p. 6-2).

For Alternative 3 when toll lanes take the place of existing free HOV lanes there is the potential for drivers who are now carpooling to change their driving patterns to SOVs to avoid the added toll costs and congestion in the GP lanes. Alternative 3, therefore, has the potential to cause increased traffic impacts to routes (including arterial travel routes) other than the I-405 Freeway. The number of vehicles traveling other parallel routes could be significant. If added SOVs are added to the arterial roadways due to Alternative 3, those vehicles, not previously on the street system would also result in added noise and air quality impacts.

The Traffic Study contains numerous inconsistencies, resulting in the presentation of inaccurate information and analyses in the DEIR/S. For example:

- **Page 2.1-3 (Traffic Study).** The study indicates that "zero flow rate occurs... when density becomes so high that all vehicles must stop – the speed is zero and the flow rate is zero... vehicles cannot pass a point on the roadway." Yet, in Table 2.3.1, (Existing [2009] I-405 Mainline Peak Hour Level of Service), LOS "F" conditions result in extremely large traffic volumes that exceed "capacity" but, based on the accompanying discussion (p. 2.1-3), the traffic volumes (passing a point) should be extremely low. The high traffic volumes indicated for the LOS "F" locations (shown in Table 2.3.1) must be erroneous since bumper-to-bumper traffic would allow very few cars to pass a particular point during a one-hour period (since they are stopped and their speeds approach zero).

The Traffic Study indicates the "Highway Capacity Manual" (HCM) was used to analyze the traffic conditions. That methodology is not, however, reliable for freeway breakdown (LOS "F") conditions. As a result, the methodology employed in the Traffic Study was improper for the traffic conditions encountered throughout the study area. A more sophisticated analysis methodology should have been utilized so that an adequate analysis (and full disclosure) of traffic-related impacts can have been provided. For

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example, some type of traffic simulation procedure is needed to correctly identify the traffic impacts.	273
<ul style="list-style-type: none"> <li>Page 2.1-9 (Traffic Study). The Traffic Study indicates that analyses for freeway ramps and ramp-freeway junctions were performed under both "constrained" and "unconstrained" mainline freeway conditions. The ramp analysis tables (Table 2.4.5, p. 2.4-20), however, show the same traffic volumes for both constrained and unconstrained conditions. Additionally, different densities are indicated; however, pursuant to the Traffic Study, this is not possible since the traffic flows would change as a function of density variations (Figure 2.1.1, p. 2.1-4).</li> </ul>	
It does not appear the effects of ramp metering have been included in the traffic evaluations. Ramp metering assumptions and evaluations would be critical to every aspect of the traffic analyses. Current ramp meter effects, including reasonable assumptions of future ramp meter conditions, must be incorporated throughout the Traffic Study, including (but not limited to) the analyses for the mainline freeway, the ramp merge points, the ramp intersections, queuing on the ramps, the ramp traffic volumes, and freeway mainline traffic volumes. Given the overburdened transportation systems (freeways, arterials, and other modes of transportation) ramp meter assumptions will have a "ripple effect" through the surrounding areas. Many of those effects were not analyzed in the Traffic Study.	274
Each project alternatives would be expected to generate unique transportation travel patterns within and surrounding the study areas. The project's alternative improvements (e.g., on the I-405 Freeway mainline), therefore, would create differing levels of congestion and cause people to make differing transportation choices (i.e., varying mode choices and travel patterns) causing differing traffic impacts for each of the build alternatives and affecting areas. For example:	275
<ul style="list-style-type: none"> <li>Page 2.1-5 (Traffic Study). The Traffic Study indicates that it is "important to note that while speed varies by alternative, it is only predictable as relative differences between alternatives."</li> </ul>	
Since it can only predict "relative differences," it must be assumed that the analytical approach employed by the Lead Agency cannot provide accurate analyses of future traffic conditions. An analogy would be that a person believes they should not receive a ticket because they were going slower than another vehicle, however, if the driver was going 60 mph and the other vehicle 82 mph, the "relative differences" are meaningless.	
Is there an analysis methodology that could be used to more accurately assess future freeway mainline traffic and/or ramp traffic, operations?	276
Why is use of a "Speed Index" necessary? It appears that "Appendix A1" only serves to validate that the traffic on the study roadways follow typical traffic patterns, resulting in generalized conclusions.	277
<ul style="list-style-type: none"> <li>Page 2.2-3 (Traffic Study). The Traffic Study indicates that "a single demand forecast was prepared. Forecasts for each of the alternatives utilize the same total traffic volumes on a segment." Traffic projections and associated analyses for each alternative are, therefore, not unique to each alternative, including the considerations of the unique area travel patterns that would be associated with each alternative. How could the</li> </ul>	278
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"same total traffic volumes" on the freeway segments result from significantly different improvement measures?	278
If separate traffic model runs were used, the potential impacts (including beneficial impacts) on the surrounding areas could have been evaluated. Why were separate traffic model runs not prepared for each project alternative condition?	279
Having one traffic model run serve to translate everything to a very narrow perspective, namely moving a given number of vehicles through one section on one travel route. From an environmental perspective this approach results in the impacts on other areas, outside this project corridor, to be ignored. This approach further serves to unreasonably limit the discussion and analysis whether other alternatives could be formulated which would not only benefit the project freeway sections but also benefit the surrounding areas by focusing on the movement of people throughout various corridors (rather than the movement of vehicles through one freeway section).	
The HCM contains various statements which indicate that the HCM's specified procedures are inadequate and inappropriate for analysis of the proposed action. For example, the HCM includes (but is not limited to) the following examples:	
<ul style="list-style-type: none"> <li>Page 22-1 (HCM). The "Scope of the Methodology" presented in Chapter 22 deals with "freeway facilities." As indicated therein, "[f]ree-flow conditions must exist at the upstream and downstream ends of the freeway facility" for the application of the HCM procedures. Since the project study area does not meet this requirement, the use of the HCM methodology is not valid for the project's alternatives (e.g., Traffic Study, Table 2.3.1, pp. 2.3-6 and 7).</li> <li>Page 22-1 (HCM). Under "Limitations of the Methodology," the HCM indicates that "[c]ertain freeway traffic conditions cannot easily be analyzed by the methodology," an example being multiple overlapping bottlenecks. The HCM states that other tools may be more appropriate (e.g., "Refer to Part V of this manual for a discussion of simulation and other models").</li> <li>Page 22-1 (HCM). The procedures address only local oversaturated flow situations and not system-wide oversaturated flow conditions.</li> </ul>	
Caltrans' "Guide for the Preparation of Traffic Impact Studies" (December 2002) states that "[w]hen a State highway has saturated flows, the use of a micro-simulation model is encouraged for the analyses (please note however, the micro-simulation model must be calibrated and validated for reliable results)" (p. 5). As a result, reliance upon the HCM methodology is both problematic and likely to lead to erroneous results.	280
9.1.2 Major Investment Study	
The MIS Study reveals failure to provide adequate environmental analyses and information from the outset, in part due to erroneous study parameters. The MIS evaluations are inadequate for reasons that include, but are not limited to, the following:	
<ul style="list-style-type: none"> <li>The study corridor has been limited to a relatively narrow area and short section of the I-405 Freeway that currently experiences significant traffic impacts. By narrowing the</li> </ul>	
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- study corridor to, essentially, this one section of one freeway, it eliminates the possibility of identifying more dynamic and environmentally sensitive solutions. The causes of the traffic impacts (e.g., congestion) obviously extended to a regional level but the alternatives (and mitigation measures) are severely constrained to this one study area. 281
- Only 13 alternative solutions were considered. The more salient point, however, rather than the number of alternatives are the types of solutions considered. The multitude of environmental documents indicates the area's traffic problems are caused by regional and subregional (County) transportation needs, yet no regional or subregional solutions are considered. Essentially the project alternatives have been predetermined to exist only within the narrow study corridor. Conversely, the solutions to those problems require a regional or subregional approach. There is no evidence that any serious considerations were given to the formulation of broader solutions. 282
  - The approach taken in the MIS could be compared to the invention of the airplane, then only driving it on the ground, making the case it can travel at increased speeds and carry more passengers. While those arguments would be true, the more important factor (i.e., airplanes can fly) is completely ignored. The MIS makes a similar oversight due to its self-limiting approach (i.e., to consider only increased capacity along this section of the I-405 Freeway). In order to provide complete and thorough analyses of environmentally sensitive solutions, alternative solutions must include projects beyond the current study area.
  - There is significant information provided in the environmental documents regarding the increased sophistication of the available traffic models. The analyses procedure is essentially backwards in the MIS, namely potential alternatives are selected, then tested by the model. The model needs to be utilized to first analyze the problem and then solutions developed by testing multitudes of complex scenarios. Utilization of an antiquated approach of guessing a solution then using the model to justify the "best" of the limited alternatives only serves to produce short-sighted solutions. The current problems and impacts are complex and require full use of the available tools, otherwise full environmental disclosure is not possible.
- 9.2 Air Quality**
- 9.2.1 Draft Environmental Impact Report/Statement**
- The following additional comments are submitted in response to the information presented in Section 3.2.6 (Air Quality) in the DEIR/S.
- Page 3.2.6-10.** The analysis makes use of the North Coastal (SRA 18) monitoring data and supplements this with the Saddleback (SRA 19) monitoring data for particulate matter (PM). Basically, the entirety of the project represents the dividing line between the North Coastal (SRA 18) and Central Orange County (SRA 17) monitoring areas and the analysis is remiss in not providing the Central Orange County data, especially in that these data do include both  $PM_{10}$  and  $PM_{2.5}$  that are lacking in the North Coastal data set. Furthermore, because the general wind direction is characterized by an on-shore flow pattern, emissions generated along the length of the corridor are more apt to be carried to the north into SRA 17. As such, these data should also be presented and, where 283

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- applicable, these background concentrations used to present a reasonable worst-case scenario in the air quality analysis. 2835
- Page 3.2.6-12** (Table 3.2.6-3). Only 2007-2009 data has been presented. The 2010 data set is available and the analysis should be updated to include the most current data for the applicable receptor areas. 284
  - Page 3.2.6-12.** In accordance with the SCAQMD, the Lead Agency's definition of "sensitive receptors" does not go far enough so many are excluded from the analysis. According to the SCAQMD's "Final Localized Significance Threshold Methodology" (Methodology) (June 2003, Revised July 2008), the SCAQMD notes "receptor locations" as "off-site locations where persons may be exposed to the emissions from project activities. Receptor locations include residential, commercial and industrial land use areas; and any other areas where persons can be situated for an hour or longer at a time" (p. 3-2). As further indicated therein, "[f]or the purposes of CEQA analysis, the SCAQMD considers a sensitive receptor to be to be [sic] a receptor such as residence, hospital, convalescent facility were [sic] it is possible that an individual could remain for 24 hours. Commercial and industrial facilities are not included in the definition of sensitive receptor because employees do not typically remain onsite for a full 24 hours, but are present for shorter periods of time, such as eight hours" (ibid.).
- Applying a 24-hour standard for particulates to these uses is not appropriate because, according to the SCAQMD's definition, a "sensitive receptor" would need to be present at the location for the full 24-hour period; however, because CO emissions are based on 1- and 8-hour standards, the ambient air quality standards would apply and the analysis is remiss for not including proximate commercial and, where appropriate, industrial uses in the CO analysis. 285
- Page 3.2.6-22.** EMFAC2007 has now been replaced with EMFAC2011 and the analysis should be redone using the most current model available. 286
  - Page 3.2.6-29** (Table 3.2.6-8). The air quality analysis fails to include the "localized significance" analysis necessary for the construction and operation of the project. Based on the data included in the analysis, however, it can be concluded that the proposed action will result in significant localized construction impacts and present the following information to document this conclusion. 287
- The analysis specifically notes that grading activities will be limited to no more than 4.5 acres per day (p. 3.2.6-27). The analysis also notes that, including the proposed dust suppression, this construction would result in 139 pounds per day for  $PM_{10}$  and 31 pounds per day for  $PM_{2.5}$  (Table 3.2.6-8, p. 3.2.6-29). The SCAQMD screening tables for localized impacts for a 5-acre construction site located in the Saddleback Valley area (as was used in the analysis) notes that  $PM_{10}$  would present a significant impact is just 12 pounds were produced per day with receptors located at 25 meters. Based on 4.5 acres of disturbance, the impacts associated with 139 pounds of  $PM_{10}$  per day would be significant out to 500 meters. With respect to  $PM_{2.5}$ , a 5-acre construction site in Saddleback Valley would be significant at just 8 pounds per day with receptors at 25 meters. A value of 31 pounds per day on a 4.5-acre site would be significant to beyond 200 meters. 288

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As illustrated in Figure 2-1 (Sensitive Receptor Locations) in the AQR (p. 39) and Figure 3.2.6-3 in the DEIR/S (p. 3.2.6-13), which illustrates "sensitive receptors within 500 ft of the ROW" (p. 3.2.6-12), numerous "sensitive receptors" are located in Seal Beach directly adjacent to or in close proximity to the I-405 Freeway. Since there are many sensitive receptors located within these "localized significance" threshold distances, construction-term impacts would be deemed significant for both  $PM_{10}$  and  $PM_{2.5}$ .

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The DEIR/S, therefore, erroneously concludes that: (1) "Construction emissions would be temporary and not result in any long-term impacts; therefore, Alternative 2 would not result in an adverse impact related to construction emissions" (p. 3.2.6-29); and (3) "Construction emissions would be temporary and not result in any long-term impacts; therefore, Alternative 3 would not result in an adverse impact related to construction emissions" (p. 3.2.6-30). The presence of significant construction-term air quality impacts were not previously disclosed in the DEIR/S.

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- **Page 3.2.6-29** (Table 3.2.6-8). With regards to projected daily construction emissions, the table shows 106 pounds per day for  $NO_x$ . The SCAQMD CEQA construction threshold for  $NO_x$  is 100 pounds per day. Since the 106 pounds/day projections exceeds the SCAQMD threshold, the resulting impact is significant impact and must be so noted. Contrary to CEQA, no mitigation has been proposed for this significant impact.

In addition, the DEIR/S notes that construction results in 1.2 tons per acre per month for soil disturbance (p. 3.2.6-28). Based on 22 workdays per month, this results in about 110 pounds per day per acre. Using a Lead Agency's own cited control efficiency of 50 percent for site watering (p. 3.2.6-28), soil disturbance is projected to result in 55 pounds per day per acre. Based on a maximum of 4.5 acres disturbed per day (p. 3.2.6-27),  $PM_{10}$  emissions would be 194 pounds per day based on the following calculations:

$$4.5 \text{ acres per day} \times 55 \text{ pounds per acre per day} = 245 \text{ pounds per day for } PM_{10}$$

Even if 61% control efficiency is used as was used in the table:

$$110 \text{ pounds per acre per day} \times (1 - 0.61) = 43 \text{ pounds per acre per day}$$

$$4.5 \text{ acres per day} \times 43 \text{ pounds per acre per day} = 194 \text{ pounds per day for } PM_{10}$$

These values are well above the 139 pounds per day presented in the table and also in excess of SCAQMD's 150 pound/day CEQA threshold, thus resulting in a previously undisclosed significant air quality impact for both Alternative 2 and Alternative 3.

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- **Page 3.2.6-33** (Table 3.2.6-9 and Table 3.2.6-10). While the analyses include local intersections, they fails to include a "link" analysis for the freeway itself and those receptors located proximate thereto. Furthermore, the analysis fails to include the contribution of the CO emissions from the freeway at the local intersections.

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- **Page 3.2.6-38**. The text states that "[i]t was determined that the inland Anaheim Monitoring Station meteorological conditions do not accurately represent the project area." Because the I-405 Freeway serves as the border between the Costa Mesa and Anaheim areas and because the majority of the emissions will manifest themselves in the Anaheim area, what is the source and factual basis of that "determination"?

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- **Page 3.2.6-38**. The analysis of respirable particulate matter is based on "the recorded period of 2000 to 2009" (p. 3.2.6-38). Since Year 2010 data are available, the analysis needs to be revise accordingly.

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- **Page 3.2.6-41**. The text states "Tables 3.2.6-5 through 3.2.6-7 present emissions, including  $PM_{10}$  and  $PM_{2.5}$ , from vehicles traveling along the project corridor for the years 2009, 2020, and 2040 (i.e., existing, opening, and design years, respectively). Estimates of  $PM_{10}$  and  $PM_{2.5}$  emissions for opening, and horizon years show that project implementation would not generate significant additional daily emissions" (p. 3.2.6-41).

Under CEQA, the project must be compared with the "existing setting." Under the existing setting,  $PM_{2.5}$  and  $PM_{10}$  are projected at 258 and 426 pound per day respectively (Table 3.2.6-5, p. 3.2.6-24). Under Alternative 1, the proposed action would result in 508 and 559 pounds per day, respectively (Table 3.2.6-6, p. 3.2.6-25). These then represent increases of 250 and 133 pounds per day, for  $PM_{2.5}$  and  $PM_{10}$ , respectively. The SCAQMD's significance threshold (i.e., adding to an existing violation for these operational emissions is  $2.5 \mu g/m^3$ ). The analysis simply dismisses this threshold and makes no attempt to determine its potential relevancy to the proposed action.

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The following additional comments are submitted in response to the information presented in Chapter 4.0 (California Environmental Quality Act Evaluation) in the DEIR/S.

- **Page 4-5**. The analysis bases the impact on the future "no build" versus future "build" and finds no significant impacts. Under CEQA, however, the analysis must compare the future "build" versus the "existing" volumes of traffic. When this is done, the project shows a significant impact for  $PM_{2.5}$  (the addition of 354 pounds per day versus 55 pounds per day threshold) and  $PM_{10}$  (the addition of 243 pounds per day versus a 150 pound per day threshold).

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- **Page 4-6**. Contrary to the text, the analysis indicates that  $NO_x$  would exceed the SCAQMD's daily threshold, thus resulting in a significant construction impact. However, the analysis fails to identify the SCAQMD threshold values or compare the project to these values. Furthermore, the analysis fails to consider the SCAQMD's localized threshold limitations. The analysis, therefore, needs to be redone relative to SCAQMD's CEQA thresholds for mass daily emissions and localized concentration levels. When this is done, the resulting impacts are significant and remain unmitigable to less-than-significant level.

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- **Page 4-6**. The text states that the potential for increased particulate emissions associated with increases in average daily traffic (ADT) would be offset by projected increases in vehicle speed and would, therefore, not have a significant effect on proximal sensitive receptors. The analysis fails to state that much of the PM is generated as a result of re-entrained road dust. Contrary to the text, this value increases with speed. While emissions decrease with increased speed, this is only to a certain point and further increases in speed result in increased emissions due to increased vehicle, road, and air friction.

- **Page 4-7**. Contrary to the text, the analysis has failed to conduct the "localized significance analysis" as required by the SCAQMD. Because construction emissions

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have been demonstrated to exceed threshold values for PM, the project would be expected to expose sensitive receptors to substantial emissions concentrations.

## 9.2.2 Appendix J (Air Quality)

The following additional comments are submitted in response to the information presented in Appendix J (Air Quality) in the DEIR/S.

- Page 3.1-5. With regards to the EPA's "Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment and Maintenance Areas" (December 2010) (Conformity Guidance), citing the Transportation Conformity Working Group of the Southern California Association of Governments January 25, 2011 minutes, the DEIR/S notes: "Update on EPA's Quantitative PM Hot-Spot Guidance: The FR [Federal Register] notice starting the grace period was published on December 20th and the final guidance was posted on the EPA, OIAQ web site. The grace period ends on December 20th, 2012" (p. 3.1-5).

In accordance with the Conformity Guidance, a "quantitative PM hot-spot analyses will be required at the end of the conformity grace period for applying motor vehicle emissions models for such analysis. . . A hot-spot analysis is defined in 40 CFR 93.104 as an estimate of likely future localized pollutant concentrations and a comparison of those concentration to the relevant NAAQS [National Ambient Air Quality Standards]. A hot-spot analysis assesses the air quality impacts on a scale smaller than an entire nonattainment or maintenance area, including, for example, congested highways or transit terminals. Such an analysis of the area substantially affected by the project demonstrates that CAA [Clean Air Act] conformity requirements are met for the relevant NAAQS in the 'project area.' When a hot-spot analysis is required, it is included within a project-level conformity determination" (emphasis added) (p. 2).

As noted in Table S-3 (Project Schedule) in the DEIR/S, the "Record of Decision" (ROD) for the proposed action is not scheduled until "Spring 2014" (p. S-6) and "[s]ubsequent to circulation of the DEIR/EIS and selection of the preferred alternative, an Air Quality Conformity Analysis will be prepared and submitted to FHWA" (p. 3.2.6-21).

The AQR notes that "[a] qualitative particulate matter hotspot analysis was completed that concluded that the proposed project would not cause new or delay timely attainment of the National Ambient Air Quality Standards" (emphasis added) (p. 1) and that, based on that analysis, "[t]he proposed project would be consistent with transportation conformity requirements" (p. 2). It appears that the "chicken is cooked and in the pot" (e.g., "Alternative 3 is not consistent with the current RTP or FTIP. OCTA is currently pursuing revisions to both documents. This will be completed prior to the Final EIR/EIS, which will include the revised description and reference to the conforming documents," DEIR/S, p. S-13).

As required under CEQ's "Considering Cumulative Effects under the National Environmental Policy Act" (January 1997), "decisions must be supported by the best analysis based on the best data we have or are able to collect" (p. 3) and include "rigorous analyses" (p. 46). While acknowledging that the Lead Agency has a "grace period" extending until December 2012, as a public agency for a regionally significant project, because the USEPA's guidance document was release well in advance of the

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performance of the air quality analysis, because the final CEQA and NEPA document may not be certified until after December 2012, because construction is not scheduled to commence prior to 2015, and because a conformity determination must be conducted, Caltrans has a responsibility (to its constituents and stakeholders) to provide the "best" information it can. In this case, that would include a quantitative analysis of projected PM<sub>10</sub> and PM<sub>2.5</sub> emissions conducted in accordance with the USEPA's guidelines rather than to simply "opt out" based solely on a technicality.

## 9.2.3 Air Quality Report

The following additional comments are submitted in response to the information presented in the "Air Quality Report - San Diego Freeway (I-405) Improvement Project SR-73 to I-605, Orange and Los Angeles Counties" (Caltrans, May 2011).

- Appendix C (Regional Construction Emissions). The model run show a project length of just 14 miles; however, the project description states that the project is 16 miles. It is, therefore, possible that the model underestimates construction impacts by approximately 14.3 percent.

- Appendix F (CO Hotspot Analysis). The model runs show that the modeling was performed incorrectly. The analysis gives each direction of traffic (i.e., N, S, E, and W) an "approach volume," a "departure volume," and a "turning volume." This is incorrect and under-predicts these emissions. In accordance with Caltrans' "Transportation Project-Level Carbon Monoxide Protocol" (revised December 1997) (CO Protocol), each direction should have an "external approach volume," an "approach volume," (accompanied by a lower speed and higher emissions), a "departure volume," (accompanied by a lower speed and higher emissions), an "external departure volume," and a "turning volume." According to the CO Protocol (Figure B.2), each "external approach" and "external departure" distance is to be 600 meters. The "approach" and "departure" distances are each to be 150 meters. As such, the entire analysis covers a distance of 1,500 meters for each lane. The analysis under-predicts emissions because it considers a lesser distance (i.e., 1,000 meters versus the requisite 1,500 meters per lane) and does not consider that the vehicles slow and accelerate leading to higher emissions proximate to the intersection.

## 9.3 Noise

Pursuant to 23 C.F.R. 772, the proposed action constitutes a "Type I project" in that it proposes the addition of one or more: (1) through-traffic lanes that function as a high-occupancy vehicle lane, high-occupancy toll lane, bus lane, or truck climbing lane; or (2) auxiliary lanes, except for when the auxiliary lane is a turn lane; or (3) interchange lanes or ramps. If any component of a proposed project is determined to be a Type I project, as defined in the environmental document, the entire project area constitutes a Type I project.

## 9.3.1 Draft Environmental Impact Report/Statement

The following additional comments are submitted in response to the information presented in Section 3.2.7 (Noise) in the DEIR/S.

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While discussion of FHWA requirements may satisfy the NEPA requirement, under a joint CEQA/NEPA document the analysis must also look at impacts based on local standards. The CEQA Checklist inquires: "Would the project result in exposure of persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?" As such, the analysis is deficient in that it does not discuss the standards of the various municipalities that the project lies within or how the proposed action potentially impacts those local standards at the local general plan and municipal code level. Similarly, while discussion of FHWA thresholds (including the use of peak hour traffic and a 12-dBA increase in noise) may satisfy the NEPA requirement, under a joint CEQA/NEPA document, the analysis must also look at threshold levels, including the 24-hour CNEL (as opposed to just peak hour noise), and any substantial increase (e.g., 3 dBA) imposed at the local level.

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In many places the analysis notes that while a sound wall could mitigate the noise impact, it is not considered because it does not meet Caltrans' cost/benefit margin. Under CEQA, if feasible, mitigation cannot be rejected based only on cost considerations. Additionally, in many places the analysis notes that while a sound wall could mitigate the noise impact, but could not achieve 5 dBA of noise reduction and is, therefore, not considered as feasible. Under CEQA, if the impact is significant, mitigation must be provided to the extent feasible, even if it does not meet some performance standard.

304

As indicated in the NSR, Caltrans' "Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects" (Protocol) "defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dB" (p. 19). Independent of that Protocol, a sound wall is generally "acoustically feasible" if it attains a decrease of 5 dBA (e.g., "Noise abatement is considered to be acoustically feasible if it provides noise reduction of at least 5-dB at receivers subject to noise impacts," NADR, p. 1); however, the impact would not be significant unless the noise increased by 12 dBA. As such, the residual noise could be 7-dBA above the ambient noise and, in accordance with the methodology presented, would be considered mitigated and/or less than significant. As a result, based on the continued fragmentation of improvement projects into short-term horizons, each separate project could produce a 12 dBA increase over then existing noise levels but never be deemed significant. Conversely, under CEQA (although the Department seeks to avoid its application), if this 7-dBA increase remains above that prescribed for a significant increase at the local level, the measure would be considered ineffective and the resulting impact would remain significant.

305

- **Page 3.2.7-4.** While the text notes that these readings were 24-hours in duration, the data does not support this statement. For example, the reading at 3077 Yukon Avenues (reported to be a 24-hour reading) actually ran from 10:50 AM to 9:53 AM the following morning. Thus, the measurement failed to cover the 10:51 to 9:52 AM period, as is shown in the technical study.

306

- **Page 3.2.7-9.** The text states: "With consideration of the acoustic benefit and the incremental cost, Sound wall S708 is recommended" (emphasis added) (p. 3.2.7-9). The analysis carries similar "recommendations" throughout the text. Under CEQA, mitigation measures are not merely "recommendations" but are enforceable actions and binding obligations (see 14 CCR 15126.4(a)(2)).

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With regards to Soundwall S733, the text further states: "The estimated total construction cost of this soundwall is \$112,000, which exceeds the reasonable allowance of \$43,000. With consideration of the acoustic benefit and the incremental cost, construction of Sound wall S733 is not reasonable; therefore, it is not recommended" (p. 3.2.7-9). As a result, it is evident that the Lead Agency's decision to install, fortify, or replace a soundwall is not related to the quantifiable acoustical impact of the proposed action but the cost of the wall required to reduce project-related noise to affected receptors. The Department seeks to assert that its obligations to avoid, minimize, or mitigate the impacts of its actions under CEQA and NEPA are limited to a predetermined cost-benefit ratio above which it has no obligation. That approach is not consistent with CEQA.

307

As stipulated under Section 15125.4(a)(3) of the State CEQA Guidelines, mitigation measures are not required for effects which are not found to be significant. It is, therefore, the Lead Agency's significant determination rather than cost considerations that determine whether mitigation needs to be incorporated.

- **Page 3.2.7-43.** The analysis fails to quantify the impacts of construction noise or provide a discussion of the projected levels at proximate receptor locations. The analysis never concludes whether construction noise impacts are significant but nevertheless imposes mitigation. In addition, the analysis never discloses as to whether the mitigation reduces the impact to a less-than-significant level.

308

The following additional comments are submitted in response to the information presented in Chapter 4.0 (California Environmental Quality Act Evaluation) in the DEIR/S.

- **Page 4-12.** The text states that temporary noise impacts are to be anticipated. However, the text never establishes the criteria to determine if the impacts are significant or less than significant. The analysis then requires measures in order to minimize noise, stating that those measures would reduce noise to a less-than-significant level. The impact must be held to some quantitative standard and the impact reassessed after application of the mitigation to determine if it is then less than significant.

309

- **Page 4-12.** The text notes that a change of 5 dBA is considered as the minimum perceptible change in noise levels. However, the NSR states that "it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase and a 10 dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3 dB increase in sound, would generally be perceived as detectable by the average person" (p. 14).

310

The I-405 Freeway passes through a number of municipalities having their own definition of perceptibility and/or significant change. The Seal Beach General Plan (Noise Element) notes that "[a] 3-dBA increase in noise levels is often noticeable to residents." With regards to a 3-dBA increase, the Noise Element further notes that "residents will perceive the noise as increasing significantly."

The CEQA Checklist inquires: "Would the project result in exposure of persons to or generate noise levels in excess of standards established in the local general plan or

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noise ordinance, or applicable standards of other agencies?" As such, the analysis must address these impacts in accordance with local standards and thresholds.

- **Page 4-13.** The analysis notes that it includes the "recommended noise abatement" measures. Under CEQA, the analysis must be compiled showing the project as described. "Recommended measures" have no meaning or place in CEQA. If these are project "commitments," they must be noted as such and disclosed in the project description. If they are to be mitigation measures, then the analysis must first be compiled without them to assess the impact of the project. They are then imposed and the analysis redone with their inclusion to demonstrate their effectiveness and whether the residual impact remains significant

## 9.3.2 Noise Abatement Decision Report

The following additional comments are submitted in response to the information presented in the "Noise Abatement Decision Report – San Diego Freeway (I-405) Improvement Project SR-73 to I-605, Orange and Los Angeles Counties" (Caltrans, September 2011).

- **Soundwall S1162.** As indicated in the NSR: "Soundwall S1162 would be located at the edge of shoulder along the northbound side of I-405. It would provide abatement for the City of Seal Beach Tennis Court Center, an area that already experiences some noise reduction from a combination of an existing property wall and berm. The noise analysis indicates that a 5 dB noise reduction would only be achieved at one of the two modeled receivers positioned behind this barrier. Figures 22 and 23 in Appendix A1 show the minimum heights and location of Soundwall S1162 to achieve at least 5 dB noise reduction at this tennis facility" (p. 62). As indicated in Table 7-21 (Summary of Reasonableness Determination Data – Alternative 1 0 Soundwall S1162), a 12-foot or a 14-foot barrier would produce a 5 decibel (dB) noise reduction (p. 66). As indicated in the NADR, with regards to the area located between Valley View Street and Seal Beach Boulevard, the following information is presented regarding "Soundwall S1162":

Soundwall S1162 would be located at the edge of shoulder along the northbound side of I-405 and would extend an existing soundwall 700 feet to the north. The total construction cost of this wall is estimated to be from \$225,000 which exceeds the reasonable allowance of \$43,000. Figure 23 in Appendix A2 of NSR shows the height and length of Soundwall S1162 to provide feasible abatement. With consideration of the acoustic benefit and the incremental cost, the construction of Soundwall S1162 is not reasonable and therefore not recommended. However, this area is already partially protected by a 6-foot high private wall on top of a berm (p. 53).

As illustrated on Figures 22 and 23 (February 23, 2011) in the NSR, Soundwall S1162 is located in the vicinity of the Seal Beach Tennis Center, extending from the parking area located on the west side of that facility to Aster Street. As indicated by the above excerpt, although the Lead Agency acknowledges the tennis center as a "sensitive receptor" (e.g., AQR, Figure 2-1, p. 39; DEIR/S, Figure 3.2.6-3, p. 3.2.6-13), no additional sound attenuation is being proposed in that area. As a result, although a perceptible 5 dB noise reduction could be achieved, Caltrans does not believe the expenditure to be justified.

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Presented in Table 17 (Noise Abatement Information [Alternative 3]) is information extracted from Table 3 (Noise Abatement Information [Alt-3]) in the NADR. The City believes that rejecting alternatives and/or an avoidance, minimization, or mitigation measure based on cost considerations and/or a cost-benefit ratio is inconsistent with the Lead Agency's obligations under CEQA. If authorized, the Department may seek to apply a similar cost-benefit ratio to the mitigation of GHG emissions and cancer deaths attributable to air pollutants.

Table 17  
Noise Abatement Information (Alternative 3)

Noise Barrier No.	Height (feet)	Acoustically Feasible?	Number of Benefitting Residences	Total Reasonable Allowance	Estimated Construction Cost	Cost Less Than Allowance	Preliminary Noise Abatement Decision
S1116	18	No	N/A	N/A	N/A	N/A	Replace In-Kind
S1132	18	No	N/A	N/A	N/A	N/A	Replace In-Kind
S1162	12	Yes	2	\$90,000	\$225,000	No	Not Reasonable

Source: California Department of Transportation, Noise Abatement Decision Report – San Diego Freeway (I-405) Improvement Project SR-73 to I-605, Orange and Los Angeles Counties, September 2011, Table 15 (Noise Abatement Information [Alt-3]), unpaginated

Presented in Table 18 (Anticipated Major Retaining Wall Locations and Heights for All Alternatives) is information extracted from Table 11-2D (Anticipated Major Retaining Wall Locations and Heights for All Alternatives) in the VIA. Although Soundwall S1116 and S1132 are identified therein, there is no reference to Soundwall S1162. When considered in combination with Table 17 (Noise Abatement Information [Alternative 3]), the absence of any reference to Soundwall S1162 suggesting that the Department has no plans to modify, replace, or relocate that wall under any of the three build alternatives. Similarly, should Alternative 1 be selected, no modifications, replacement, or relocation activities affecting Soundwall S1116 and Soundwall S1132 would appear to be proposed.

As indicated in Table 18 (Anticipated Major Retaining Wall Locations and Heights for All Alternatives) above, should Alternative 2 be selected, no modifications, replacement, or relocation activities affecting Soundwall S1132 would appear to be proposed. That assumption would contradict the information presented in Table 17 (Noise Abatement Information [Alternative 3]) above which contains no similar stipulation. As such, it is not possible to clearly ascertain from the information presented in the DEIR/S what are the Department's actual plans for Soundwall S1116 and Soundwall S1132, including the Lead Agency's definition of "edge of shoulder" in the context of the existing location of those two soundwalls.

The City seeks clarification from the Department as to the precise nature of all noise mitigation strategies being considered with Seal Beach, including more specificity as to the location and design of any new, modified, fortified, and/or replacement soundwalls, the rationale for the rejection of any soundwall under consideration, the noise mitigation anticipated to result therefrom, any additional noise reduction resulting from a minor modification to wall height, the Department's post-construction monitoring plans to

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assess the actual mitigation resulting from those improvements, and any remedial actions that are proposed should the implemented measures fail to attain their projected efficacy.

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Table 18  
Anticipated Major Retaining Wall Locations and Heights for All Alternatives

Sound Wall No.	Side of Freeway		Soundwall Location & Side of Highway	Alternative			Approx. Wall Height (feet)	Approx. Wall Length (feet)
	NB	SB		1	2	3		
S1116	X		Replaces an existing soundwall with the same height at the edge of shoulder along the NB mainline between Springdale and Seal Beach Dr.		X	X	18	470 <sup>2</sup> 400 <sup>3</sup>
S1132		X	Replaces an existing soundwall with the same height at the edge of shoulder along the NB mainline between Springdale and Seal Beach Dr.			X	18	1553

Footnotes:  
1. Alternative 1  
2. Alternative 2  
3. Alternative 3

Source: Visual Impact Assessment – San Diego Freeway (I-405) Improvement Project SR-73 to I-605, Orange and Los Angeles Counties (Caltrans and Parsons, May 2011, Table 11-2D (Anticipated Major Retaining Wall Locations and Heights for All Alternatives), p. 125

- Soundwalls S1132 and S1116. As illustrated on Figures 21 and 22 (February 23, 2011) in the NSR, Soundwall S1132 extends from east of Aster Street to west of Jasmin Circle (east of Shapel Park) and Soundwall S1116 extends further eastward to Violet Street. Between Violet Street and the City boundaries, no soundwall is illustrated in the NSR. As indicated in Table 16 (Noise Abatement Information [Alternative 3]), extracted from Table 3 (Noise Abatement Information [Alt-3]) in the NADR, the Department proposes to replace both soundwalls "in-kind." No reference is made as to whether any portion of those soundwalls will be relocated from a location inset from the existing edge of Caltrans' ROW to a replacement location further to the north.

The City seeks clarification from the Department as to Caltrans' current proposal with regards to Soundwalls S1132 and S1116, including additional information concerning whether those existing walls will be moved from their current locations and more specifically as to the design of those "in-kind" facilities, the timing of proposed demolition and construction, the anticipated length of the construction period, the projected timeframe when no or only partial soundwalls will be in place, and any short-term or long-term strategies to attenuate both construction and operational impacts at the affected residences. How would increases in wall height enhance noise mitigation (e.g., would a higher wall provide greater noise abatement)?

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## 10.0 RECIRCULATION/SUPPLEMENTATION REQUIRED

Section 21005(a) of CEQA states: "The Legislature finds and declares that it is the policy of the state that noncompliance with the information disclosure provisions of this division which precludes relevant information from being presented to the public agency, or noncompliance

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with substantive requirements of this division, may constitute a prejudicial abuse of discretion within the meaning of Sections 21168 and 21168.5, regardless of whether a different outcome would have resulted if the public agency had complied with those provisions." The courts have determined that "[t]he failure to comply with the law subverts the purposes of CEQA if it omits material necessary to informed decisionmaking and informed public participation. Case law is clear that, in such cases, the error is prejudicial [Citations.]" (Sunnyvale West Neighborhood Assn. v. City of Sunnyvale City Council [2010], quoting County of Amador v. El Dorado County Water Agency (1999)

As indicated by the CEQ, should "a commenter point out an alternative which is not a variation of the proposal or of any alternative discussed in the draft impact statement, and is a reasonable alternative that warrants serious agency response," then the federal lead "agency must issue a supplement to the draft EIS that discusses this new alternative. . . If the permitting agency has failed to consider that approach in the Draft EIS, and the approach cannot be dismissed by the agency as unreasonable, a supplement to the Draft EIS, which discusses that alternative, must be prepared" (CEQ Question, Question 29b).

Pursuant to Section 15088.5 of the State CEQA Guidelines, a lead agency is required to recirculate a previously circulated EIR when "significant new information is added to the EIR after release of the NOC but before certification. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantive adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project proponents have declined to implement. "Significant new information requiring recirculation includes, but is not limited to, a disclosure that: (1) a new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented; (2) a substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance; (3) a feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project but the project's proponents decline to adopt it; and (4) the draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded."

Pursuant to Section 15151 of the State CEQA Guidelines: an EIR must provide a degree of analysis and detail about environmental impacts that will enable decision makers to make intelligent judgments in light of the environmental consequences of their decisions. The sufficiency of the EIR is to be reviewed in light of what is reasonably feasible (Kings County Farm Bureau v. City of Hanford [1990]). The Lead Agency must make a good faith effort at full disclosure of environmental impacts. In order to accomplish this requirement, it is essential that the project is adequately described and that existing setting information is complete (County of Inyo v. City of Los Angeles [1977]). Decisionmakers and other stakeholders need to fully understand the implications of the choices that are presented relative to the proposed action and to feasible mitigation measures and alternatives thereto (Laurel Heights Improvement Association v. Regents of University of California [1988]). As indicated in Village Laguna of Laguna Beach, Inc. v. Board of Supervisors (1982), an EIR is "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return" (emphasis added).

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The absence of any meaningful analysis of project-specific and cumulative environmental and socioeconomic ramifications of the proposed action, including the document's failure to consider a reasonable range of alternatives and to identify feasible mitigation measures, has effectively "deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect" (14 CCR 15088.5). The totality of comments presented herein provides substantial evidence supporting the need to recirculate and supplement the DEIR/S.

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**11.0 DOCUMENTS CITED**

(Partial Listing)

**11.1 Publications**

- Alameda County Congestion Management Agency, HOT Credit Lanes Feasibility Study, Parsons Brinckerhoff Quade & Douglas, August 2005.
- American Association of State Highway and Transportation Officials, Practitioner's Handbook: Managing the NEPA Process for Toll Lanes and Toll Roads, July 2006.
- Araujo, Jesus A. et al., Ambient Particulate Pollutants in the Ultrafine Range Promote Early Atherosclerosis and Systemic Oxidative Stress, Circulation Research, March 14, 2008.
- Brugge, Doug, et al., Near Highway Pollutants in Motor Vehicle Exhaust: A Review of Epidemiologic Evidence of Cardiac and Pulmonary Health Risks, Environmental Health, August 9, 2007.
- California Air Resources Board, Air Quality and Land Use Handbook: A Community Health Perspective, April 2005.
- California Air Resources Control Board, Climate Change Proposed Scoping Plan, A Framework for Change, October 2008.
- California Department of Education, Guidance Protocol for School Site Pipeline Risk Analysis, Volume I – User's Manual, February 2007.
- California Department of Public Health, Health Co-Benefits and Transportation-Related Reductions in Greenhouse Gas Emissions in the Bay Area, November 11, 2011.
- California Department of Transportation, 2010 Annual Average Daily Truck Traffic on the California State Highway System, undated.
- California Department of Transportation, 2009 Annual Average Daily Truck Traffic on the California State Highway System, December 2010.
- California Department of Transportation, California HOV/Express Lane Business Plan 2009, May 15, 2009.
- California Department of Transportation, California Interregional State Highways – Major Planning Considerations, Trends, and Implications, January 2010.
- California Department of Transportation, California Transportation Plan 2025, April 2006.
- California Department of Transportation, Caltrans Strategic Plan 2007-2012, December 17, 2007.
- California Department of Transportation, Corridor System Management Plan (CSMP) – Orange County SR-22 Comprehensive Performance Assessment and Causality Analysis, Final Draft, May 4, 2009.
- California Department of Transportation and Los Angeles County Metropolitan Transportation Authority, Draft Environmental Impact Report – Add One High Occupancy Vehicle Lane in Each Direction on the San Bernardino Freeway (Interstate 10) from Puente Avenue to State Route 57/71 in Los Angeles County, November 2011.

July 2012  
Page 194San Diego Freeway Improvement Project  
City of Seal Beach

## GL14 Continued

Draft Environmental Impact Report / Statement  
SCH No. 2009091001

- California Department of Transportation and Los Angeles County Metropolitan Transportation Authority, Draft Environmental Impact Report/Environmental Impact Statement and Section 4(f) Evaluation - I-710 Corridor Project, Los Angeles County, California, District 07-LA-710-PM 4.9/24.9, EA 249900" (California Department of Transportation and Los Angeles County Metropolitan Transportation Authority, June 2012).
- California Department of Transportation and Orange County Transportation Authority, Draft Transportation Management Plan, August 2011.
- California Department of Transportation and Federal Highway Administration, Final Environmental Impact Report/Environmental Impact Statement – Interstate 5 (Santa Ana Freeway) from State Route 91 in Orange County to Interstate 605 in Los Angeles County, California, June 19, 2007.
- California Department of Transportation, Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact – The Interstate 10 (San Bernardino Freeway/El Monte Busway) High Occupancy Toll Lanes Project, SCH No. 2009061050, April 2010.
- California Department of Transportation, Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact – The Interstate 110 (Harbor Freeway/Transitway) High Occupancy Toll Lanes Project, SCH No. 2009061059, April 2010.
- California Department of Transportation, Guide for the Preparation of Traffic Impact Studies, December 2002.
- California Department of Transportation, Orange County Transportation Commission, and United States Department of Transportation, Final Environmental Impact Statement and Environmental Impact Report – State Route 22/West Orange County Connector, SCH No. 98084001, March 2003.
- California Department of Transportation, 2010 Interregional Transportation Improvement Program, February 12, 2010.
- California Department of Transportation, Interregional Transportation Strategic Plan: A Plan to Guide Development of the Interregional Transportation System, June 1998.
- California Department of Transportation, Office of Strategic Planning and Performance Management, Performance Measures for the Quarter Ending December 31, 2011, undated.
- California Department of Transportation, Prioritization of Transportation Projects for Economic Stimulus with Respect to Greenhouse Gases, Final, June 20, 2009.
- California Department of Transportation and Orange County Transportation Commission, Project Study Report/Project Development Support, July 2008.
- California Department of Transportation and Metropolitan Transportation Commission, Regional HOT Lanes Network Feasibility Study, September 2007.
- California Department of Transportation, Route Concept Report – Interstate 405, San Diego Freeway, 12-ORA P.M. 0.23/24.18, November 1999.
- California Department of Transportation, Transportation Project-Level Carbon Monoxide Protocol, revised December 1997.
- California Transportation Commission, Statewide Transportation Needs Assessment, Final Report, November 2011.
- Cervero, Robert and Hansen, Mark, Induced Travel Demand and Induced Road Investment, A Simultaneous Equation Analysis, Journal of Transport Economics and Policy, Volume 36, Part 3, September 2002, pp. 469-490.
- Cervero, Robert, Beyond Travel Time Savings: An Expanded Framework for Evaluating Urban Transport Projects, World Bank, 2011.

San Diego Freeway Improvement Project  
City of Seal BeachJuly 2012  
Page 195

**GL14 Continued**

**Draft Environmental Impact Report / Statement**  
SCH No. 2009091001

- City of Seal Beach, City of Seal Beach General Plan.
- City of Seal Beach, City of Seal Beach Municipal Code.
- Congress of the United States, Effects of Gasoline Prices on Driving Behavior and Vehicle Markets, Congressional Budget Office, January 2008.
- Council on Environmental Quality, Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact, January 14, 2011.
- Council on Environmental Quality, Considering Cumulative Effects under the National Environmental Policy Act, January 1997.
- Council on Environmental Quality, Draft NEPA Guidelines on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions, February 18, 2010.
- Council on Environmental Quality, Forty Most Asked Questions Concerning CEQ's NEPA Regulations, March 23, 1981.
- Council on Environmental Quality, Memorandum to Heads of Agencies on the Application of the National Environmental Policy Act to Proposed Federal Actions in the United States with Transboundary Effects, July 1, 1997.
- Council on Environmental Quality, Final Guidance for Federal Departments and Agencies on the Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact, January 21, 2011.
- Deakin, Elizabeth C., The Social Impacts of Interstate Highway System, What Are the Repercussions, University of California Transportation Center, June 2006.
- Delfino, Ralph J. et al., Association of Biomarkers of Systemic Inflammation with Organic Components and Source in Quasi-Ultrafine Particles, Environmental Health Perspectives, Vol. 118, No. 6, June 2010.
- Encyclopedia Britannica online.
- Federal Highway Administration, Advanced Metropolitan Planning and Operations – An Objective-Driven Performance-Based Approach, A Guidebook, February 2010.
- Federal Highway Administration, An Agency Guide on Overcoming Unique Challenges to Localized Congestion Reduction Projects, September 2011.
- Federal Highway Administration, Congestion Pricing and NEPA: Environmental Benefits and Considerations, November 2008.
- Federal Highway Administration, Consideration for High Occupancy Vehicle (HOV) Lane to High Occupancy Toll (HOT) Lane Conversions Guidebook, June 2007.
- Federal Highway Administration, Efficient Use of Highway Capacity Summary – Report to Congress, November 2010.
- Federal Highway Administration, Environmental Justice Emerging Trends and Best Practices Guidebook, November 1, 2011.
- Federal Highway Administration, Federal-Aid Highway Program Guidance on High Occupancy Vehicle (HOV) Lanes, August 2008.
- Federal Highway Administration, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, DOT Order 6640.23, December 1988.
- Federal Highway Administration, Final Report - Traffic Congestion and Reliability: Linking Solutions to Problems, July 19, 2004.
- Federal Highway Administration, Final Report - Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation, September 1, 2005.
- Federal Highway Administration, Guidance on Using Corridor and Subarea Planning to Inform NEPA, April 5, 2011.
- Federal Highway Administration, Income-Based Equity Impacts of Congestion Pricing, A Primer, December 2008.

July 2012  
Page 186

San Diego Freeway Improvement Project  
City of Seal Beach

**GL14 Continued**

**Draft Environmental Impact Report / Statement**  
SCH No. 2009091001

- Federal Highway Administration, Innovations for Tomorrow's Transportation, Issue 1, May 2009.
- Federal Highway Administration, Integrating Freight into NEPA Analysis, September 2010.
- Federal Highway Administration, Multi-Pollutant Emissions Benefits of Transportation Strategies, Final Report, FHWA-HEP-07-004, November 14, 2006.
- Federal Highway Administration, NEPA and Transportation Decisionmaking – The Importance of Purpose and Need in Environmental Documents, September 18, 1990.
- Federal Highway Administration, Public Roads, March/April 2009, Vol. 72, No. 5.
- Federal Highway Administration, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU); Opportunities for State and Other Qualifying Agencies to Gain Authority to Toll Facilities Constructed Using Federal Funds, January 6, 2006.
- Federal Highway Administration and Federal Transit Administration, SAFETEA-LU Environmental Review Process Final Guidance, November 15, 2006.
- Federal Highway Administration, 2010 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance, Report to Congress, March 30, 2012.
- Federal Highway Administration, 2010 Urban Congestion Trends – Enhancing System Reliability with Operations, FHWA-HOP-11-024, 2010.
- Federal Highway Administration, 2011 Urban Congestion Trends – Improving Travel Reliability with Operations, FHWA-HOP-12-019, undated.
- Fuhs, C. and J. Oberberger, HOV Facility Development: A Review of National Trends, Paper No. 02-3922, Parsons Brinckerhoff Quade and Douglas, Inc., undated.
- Gauderman, James W., et al, Effects of Exposure to Traffic on Lung Development from 10 to 18 Years of Age: A Cohort Study, Lancet, 2006, Vol. 368.
- Georgia State Road and Tollway Authority, Truck Only Toll Facilities: Potential for Implementation in the Atlantic Region, Final Report, Parsons, Brinckerhoff, Quade & Douglas, July 18, 2005.
- Goodin, Ginger and Wikander, John, Out for the Count, Tolltrans 2009, Traffic Technology International, 2009.
- Grahame, Thomas J. and Schlesinger, Richard B, Cardiovascular Health and Particulate Vehicular Emissions: A Critical Evaluation of the Evidence, Air Quality, Atmosphere and Health, 3:3-27, 2010.
- Hankey, Steve, Marshall, Julian D., and Brauer, Michael, Health Impacts of the Build Environment: Within-Urban Variability in Physical Inactivity, Air Pollution, and Ischemic Heart Disease Mortality, Environmental Health Perspectives, Vol. 120, No. 2, February 2012.
- Hu, Shishan et al., A Wide Area of Air Pollutant Impact Downwind of a Freeway during Pre-Sunrise Hours, Atmospheric Environment 43:2541-2549, 2009.
- Kempton, Will, Update on the Interstate 405 Improvement Project Alternatives, Business Models, and Delivery Option, Orange County Transportation Commission, April 16, 2012.
- Kempton, Will, Outline of the Proposed Project Delivery Organizational Approach for the Interstate 405 Improvement Project, Orange County Transportation Commission, June 4, 2012.
- Kempton, Will, Update on Project Alternatives for the San Diego Freeway (Interstate 405) Improvement Project, Orange County Transportation Commission, August 17, 2009.
- Kempton, Will, Update on Project Alternatives for the San Diego Freeway (Interstate 405) Improvement Project, Orange County Transportation Commission, August 24, 2009.

San Diego Freeway Improvement Project  
City of Seal Beach

July 2012  
Page 187

## GL14 Continued

Draft Environmental Impact Report / Statement  
SCH No. 2009091001

- King David, Manville, Michael, and Shoup, Donald, "The Political Calculus of Congestion Pricing, University of California Transportation Center, January 2007.
- Knibbs, Luke D., Cole-Hunter, Tom, and Morawska, Lidia, A Review of Commuter Exposure to Ultrafine Particles and its Health Effects, Atmospheric Environment 25:2611-2622, 2011.
- LaHood Ray, Statements of the Honorable Ray LaHood, Secretary of Transportation before the Committee on Environment and Public Works, U.S. Senate – Hearing on Clean Energy Jobs and American Power Act of 2009, October 27, 2009.
- Leahy, Arthur T., Consideration of the San Diego Freeway Improvement Project for Future High-Occupancy Toll Lane and Design-Build Authority, Orange County Transportation Authority, January 19, 2009.
- Li, Ning et al., Ultrafine Particulate Pollutants Induce Oxidative Stress and Mitochondrial Damage, Environmental Health Perspectives, Vol. 111, No. 4, April 2003.
- Los Angeles County Metropolitan Transportation Authority, HOV Performance Program Evaluation Report, November 22, 2002.
- Los Angeles County Metropolitan Transportation Authority, 2009 Long Range Transportation Plan, October 2009.
- Loukaitou-Sideris, Anastasia, The Day that People Filled the Freeway: Re-Envisioning the Arroyo Seco Parkway and the Urban Environment in Los Angeles, University of California Transportation Center, Spring 2005.
- May, Adolf D., Leiman, Lannon, and Billheimer, John, Determining the Effectiveness of HOV Lanes, California Path Research Report UCB-ITS-PRR-2007-17, University of California, Berkeley, November 2007.
- Mondschien, Andrew, Taylor, Brian D., and Brumbaugh, Stephen, Congestion and Accessibility: What's the Relationship?, University of California Transportation Center, March 2011.
- Molina, Alejandra, Orange County Register, Streetcars, 405 Widening: Adjusting Measure M, July 3, 2012.
- Mumford, Lewis, The City in History, 1961.
- National Research Council, Surface Transportation Environmental Research: A Long-Term Strategy, Special Report 268, 2002.
- Orange County Transportation Authority, Agenda Item 18 (Report on Traffic and Revenue Analysis for the San Diego Freeway (Interstate 405) Improvement Project and Contract Amendment, February 8, 2010.
- Orange County Transportation Authority, Board Actions – Meeting of April 23, 2012.
- Orange County Transportation Authority, Destination 2035 – Moving Toward a Green Tomorrow, 2010.
- Orange County Transportation Authority, Express Lane Planning and Implementation Principles, December 12, 2011.
- Orange County Transportation Authority, Interstate 405 Major Investment Study, Final Report, February 2006.
- Orange County Transportation Authority, List of Existing Awarded Federally Funded Contracts, May 31, 2012.
- Orange County Transportation Authority, Measure M2 Triennial Performance Assessment Status Report, Staff Report, November 15, 2010.
- Orange County Transportation Authority and Los Angeles County Metropolitan Transportation Authority, Orange and Los Angeles Intercounty Transportation Study – Conceptual Alternatives Report, July 16, 2008.
- Orange County Transportation Authority, 2011 Orange County Congestion Management Program, undated.

July 2012  
Page 155San Diego Freeway Improvement Project  
City of Seal Beach

## GL14 Continued

Draft Environmental Impact Report / Statement  
SCH No. 2009091001

- Orange County Transportation Authority, Orange County High Occupancy Vehicle (HOV) Operations Policy Study, August 1, 2002.
- Orange County Transportation Authority, Renewed Measure M Transportation Investment Plan, Ordinance No. 3, July 24, 2006.
- South Coast Air Quality Management District, CEQA Air Quality Handbook, April 1993.
- South Coast Air Quality Management District, Final 2007 Air Quality Management Plan, June 1, 2007.
- South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, June 2003.
- South Coast Air Quality Management District, Multiple Air Toxics Exposure Study (MATES-II), Final Report, March 2000.
- Southern California Association of Governments, Discrete Choice Models and Behavior Response to Congestion Pricing Strategies, May 11, 2011.
- Southern California Association of Governments, Express Travel Choices Study, Frequently Asked Questions, January 13, 2011.
- Southern California Association of Governments, Final Program Environmental Impact Report – 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy, SCH No. 2011051018, April 4, 2012.
- Southern California Association of Governments, LAX/South (Orange County) High-Speed Ground Access Study, Final Report, October 2004.
- Southern California Association of Governments, LAX/South (Orange County) High-Speed Ground Access Study Status Report, February 2007.
- Southern California Association of Governments, Regional High-Occupancy Vehicle Lane System Performance Study – Final Summary Report, November 4, 2004.
- Southern California Association of Governments, 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy, April 4, 2012.
- Southern California Association of Governments, The New Economy and Jobs/Housing Balance in Southern California, April 2001.
- Schattschneider, E. E., The Semi-Sovereign People, 1961.
- Sullivan, Edward, Continuation Study to Evaluate the Impacts of the SR 91 Value-Priced Express Lanes, December 2000.
- The Resources Agency, Governor's Office of Planning and Research, Tracking CEQA Mitigation Measures under AB 3180, March 1996.
- Transportation Research Board, Transmission Pipelines and Land Use: A Risk-Informed Approach, Committee for Pipeline and Public Safety: Scoping Study on the Feasibility of Developing Risk-Informed Land Use Guidance near Existing and Future Transmission Pipelines, Special Report 281, 2004.
- Turnbull, Katherine F., Henk, Russell H., and Christiansen, Dennis L., Suggested Procedures for Evaluating the Effectiveness of Freeway HOV Facilities, Texas Transportation Institute, February 1991.
- United States Department of Transportation, California Department of Transportation, and Orange County Transportation Authority, San Diego Freeway (I-405) Frequently Asked Questions, undated.
- United States Environmental Protection Agency, Docket ID No. EPA-HQ-OAR-2009-0171, December 7, 2009.
- United States Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010, EPA 430-R-12-001, April 15, 2012.
- United States Environmental Protection Agency, Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment and Maintenance Areas, December 2010.

San Diego Freeway Improvement Project  
City of Seal BeachJuly 2012  
Page 159



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Draft Environmental Impact Report / Statement  
SCH No. 2009091001

- United States Environmental Protection Agency, Opportunities to Improve Air Quality through Transportation Pricing Programs, September 1997.
- United States Environmental Protection Agency, Our Built and Natural Environments: A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality, 2001.
- United States Geological Survey and California Geological Survey, The Shakeout Scenario, Supplemental Study – Oil and Gas Pipelines, Open File Report 2008-1150, May 2008.
- United States Transportation Research Board, Expanding Metropolitan Highways: Implications for Air Quality and Energy Use, Special Report 245, 1995.
- United States Transportation, NHTS 2001 Highlights Report, BTS03-05, 2003.
- Urban Land Institute, Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions, July 2009.
- Varaiya, Pravin, What We've Learned about Highway Congestion, University of California Transportation Center, Fall 2005.
- Winston, Clifford and Langer, Ashley, The Effect of Government Highway Spending on Road Users' Congestion Costs, Final Report to the Federal Highway Administration, Brookings Institute and University of California Berkeley, October 2004.
- Zhu, Yifang et al., Study of Ultrafine Particles Near a Major Highway with Heavy-Duty Diesel Traffic, Atmospheric Environment 36:4323-4335, 2002.

11.2 California Cases

- Bakersfield Citizens for Local Control v. City of Bakersfield, 2004.
- Big Rock Mesas Property Owners Association v. Board of Supervisors, 1977.
- Burbank-Glendale-Pasadena Airport Authority v. Hensler, 1991.
- California Oak Foundation v. Regents of the University of California, 2010.
- Center for Biological Diversity v. City of Desert Hot Springs, Riverside County Case No. RIC 464585, August 6, 2008.
- Citizens of Goleta Valley v. Board of Supervisors, 1988.
- City of Marina v. Board of Trustees of California State University, 2006.
- City of San Diego v. Board of Trustees of the California State University, 2011.
- City of Santee v. County of San Diego, 1989.
- Concerned Citizens of Costa Mesa v. 32nd District Agricultural Association, 1986.
- Communities for a Better Environment v. City of Richmond, 2010.
- Communities for a Better Environment v. South Coast Air Quality Management District, 2010.
- County of Amador v. El Dorado County Water Agency, 1999.
- County of Inyo v. City of Los Angeles, 1981.
- Dolan v. City of Tigard, 1994.
- Dry Creek Citizens Coalition v. County of Tulare, 1999.
- Endangered Habitats League, Inc. v. County of Orange, 2005.
- Environmental Council of Sacramento v. California Department of Transportation, Case No. 07CS00967, July 15, 2008.
- Friends of La Vina v. County of Los Angeles, 1991.
- Gray v. County of Madera, 2008.
- Kings County Farm Bureau v. City of Hanford, 1980.
- Kleist v. City of Glendale, 1976.
- Laurel Heights Improvement Association v. Regents of University of California, 1988.
- Madera Oversight Coalition v. County of Madera, 2011.

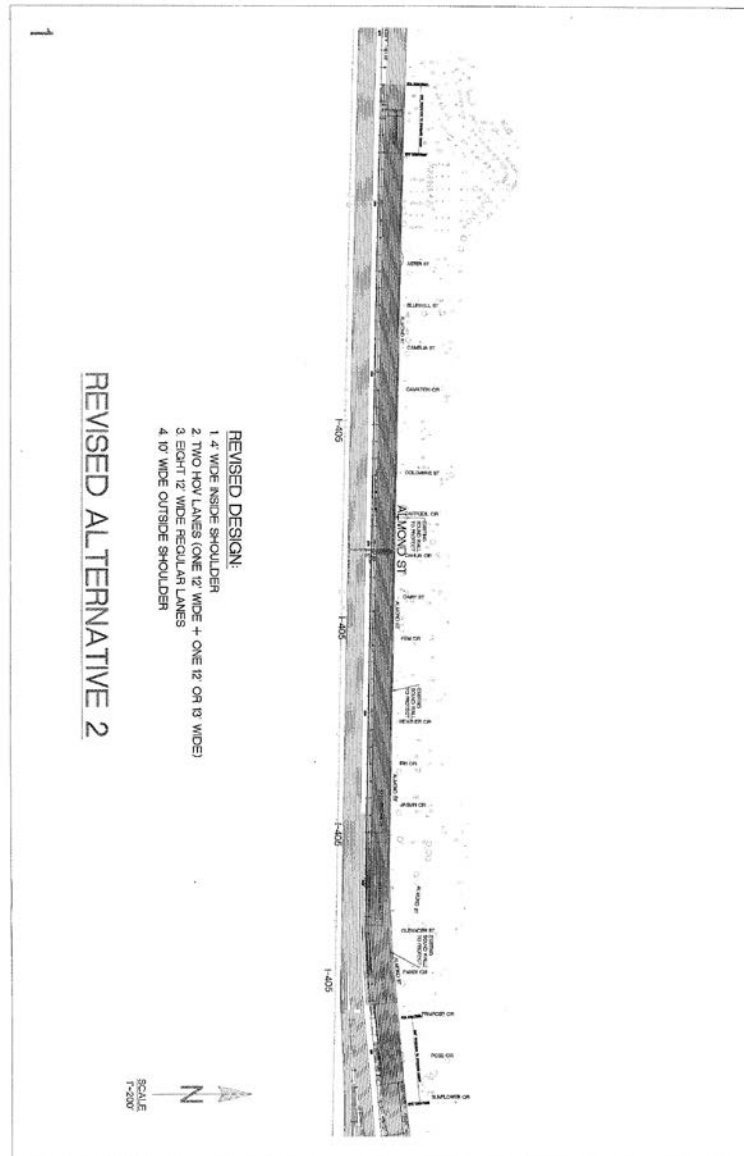
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City of Seal Beach

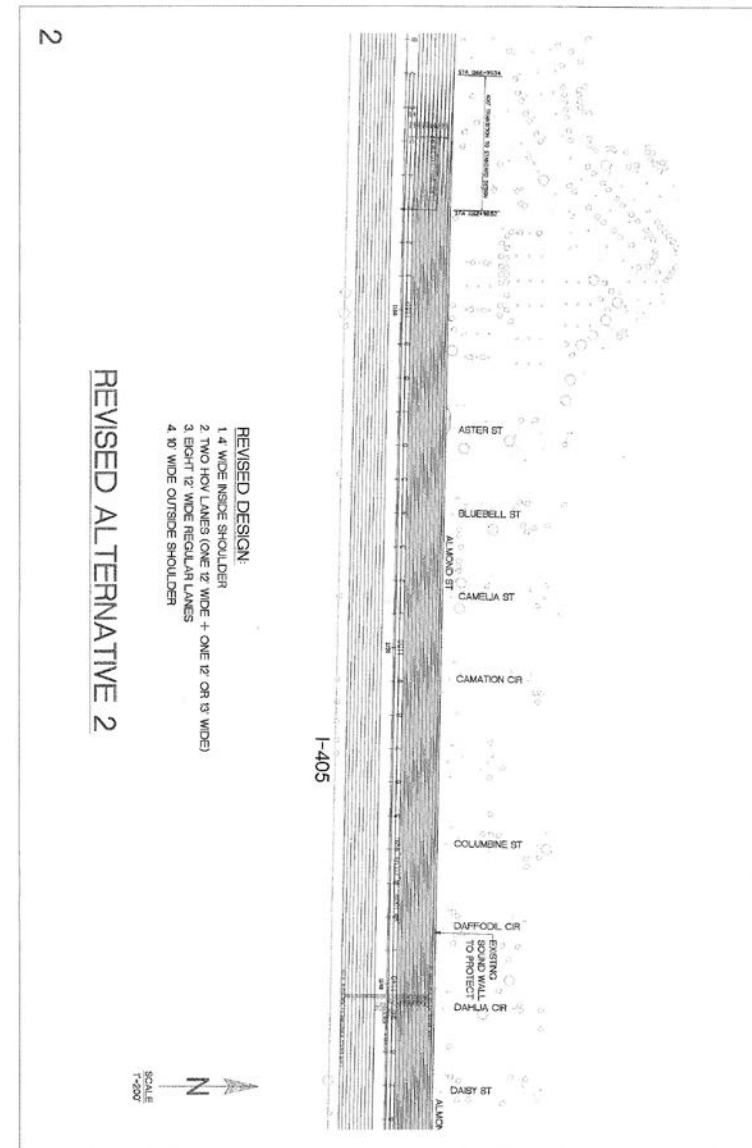
## Attachment A

W.G. Zimmerman Engineering, Inc.  
Alternative Design Configurations  
July 2012

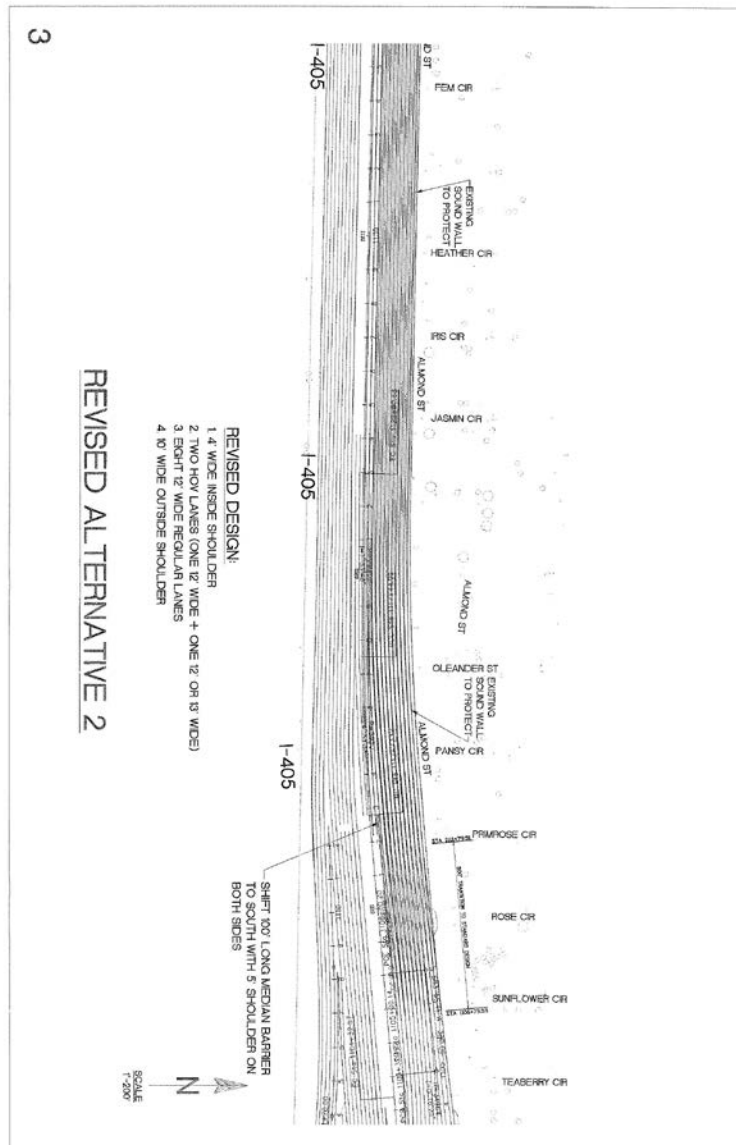
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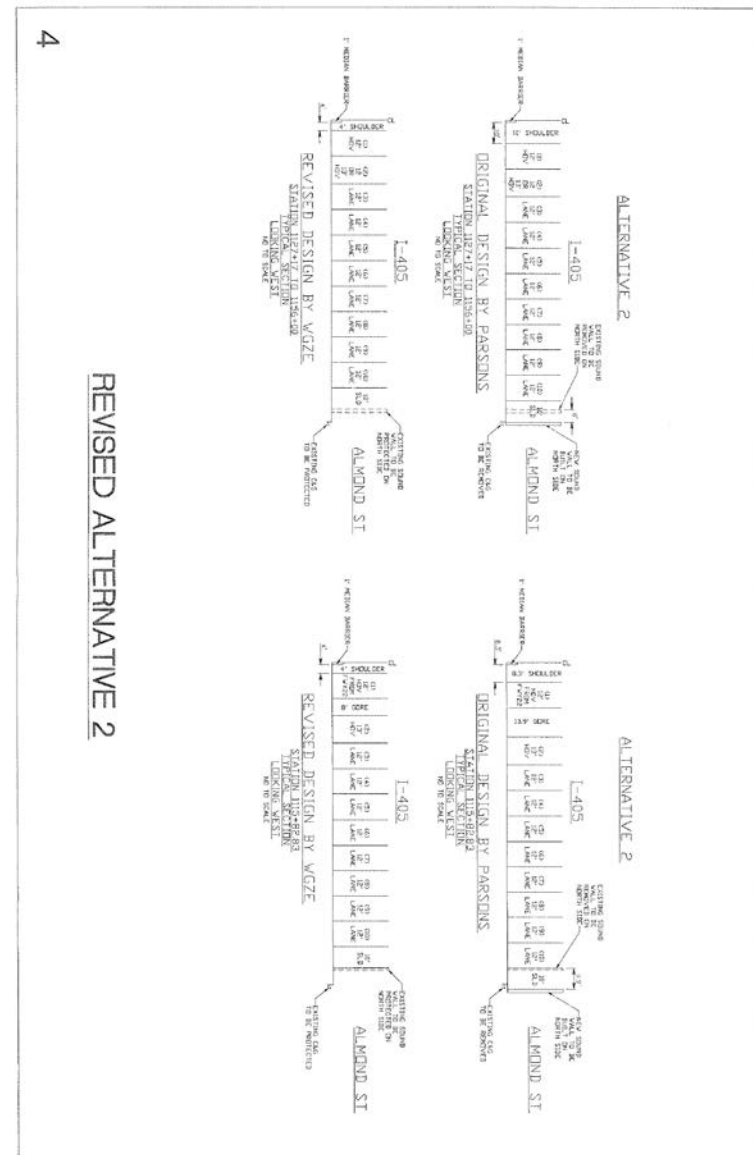
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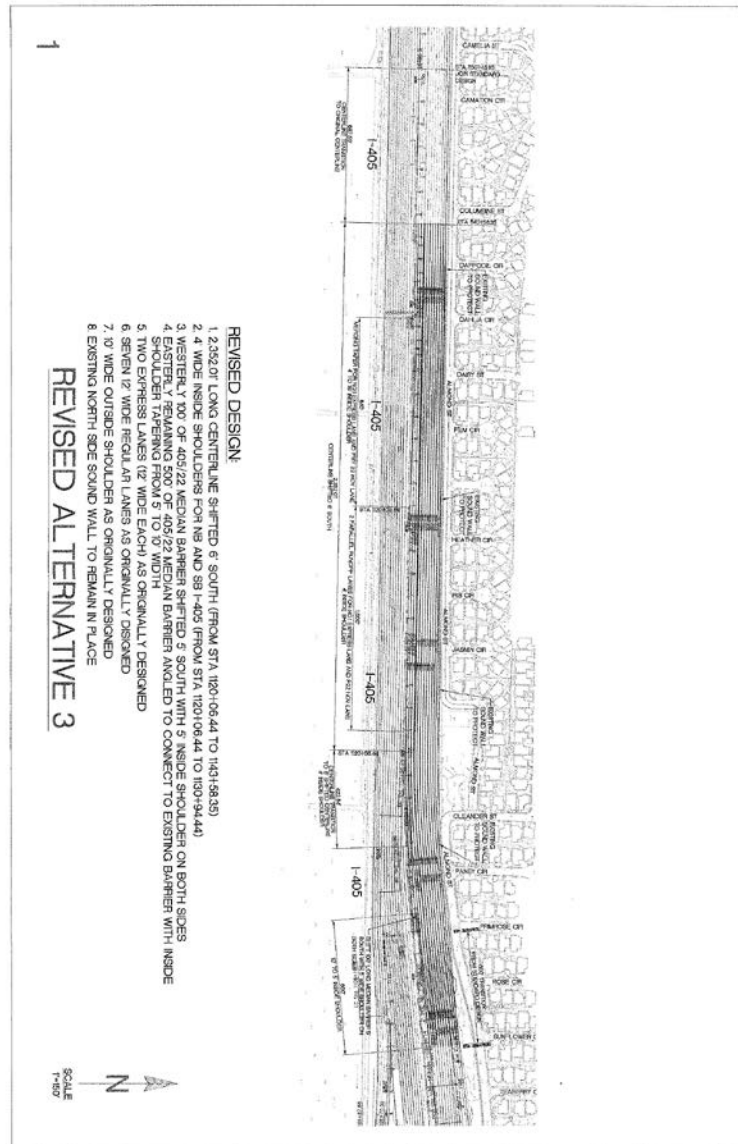
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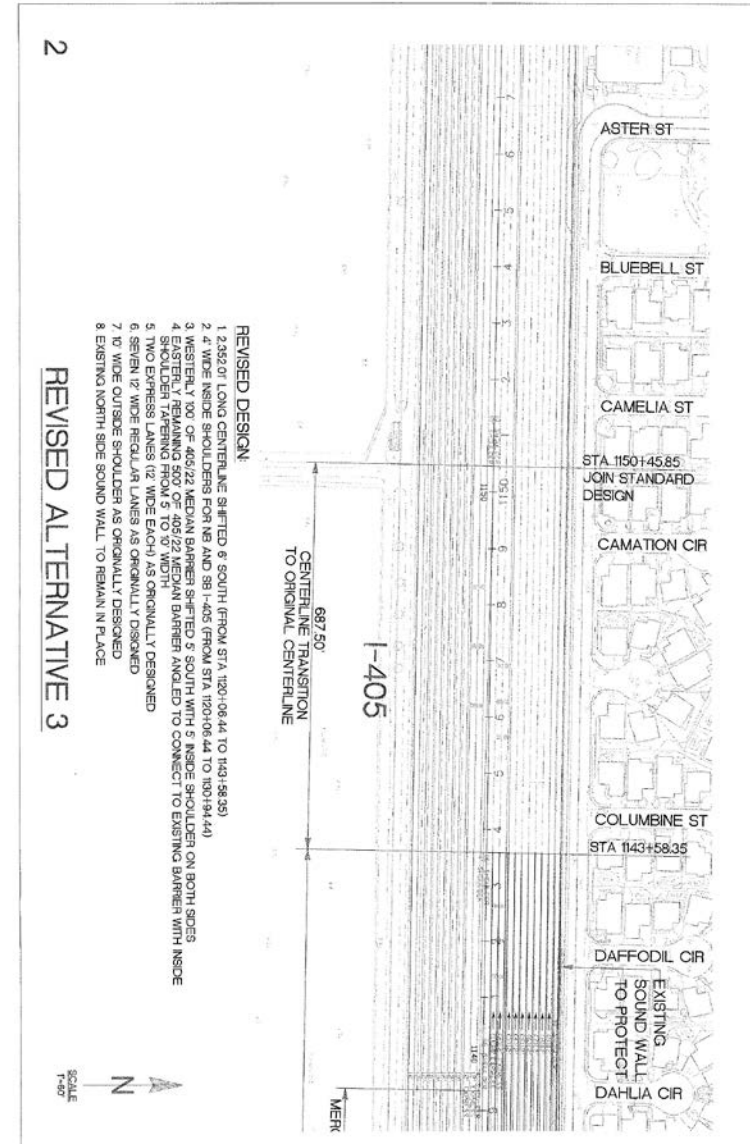
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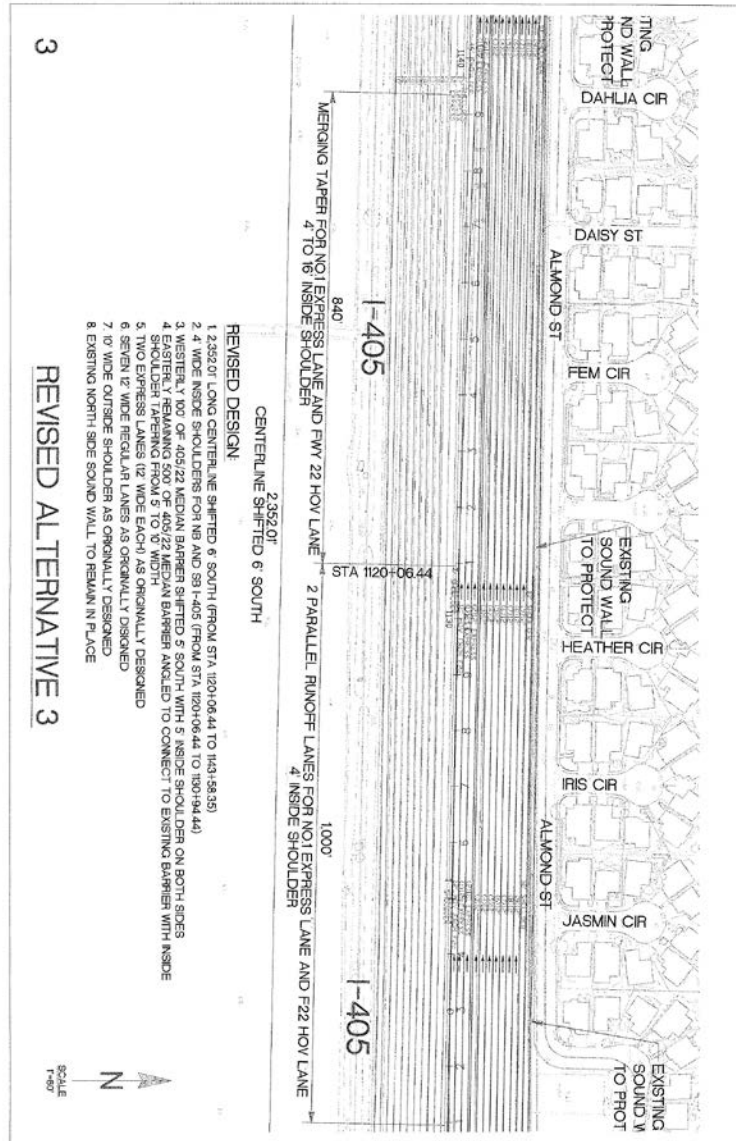
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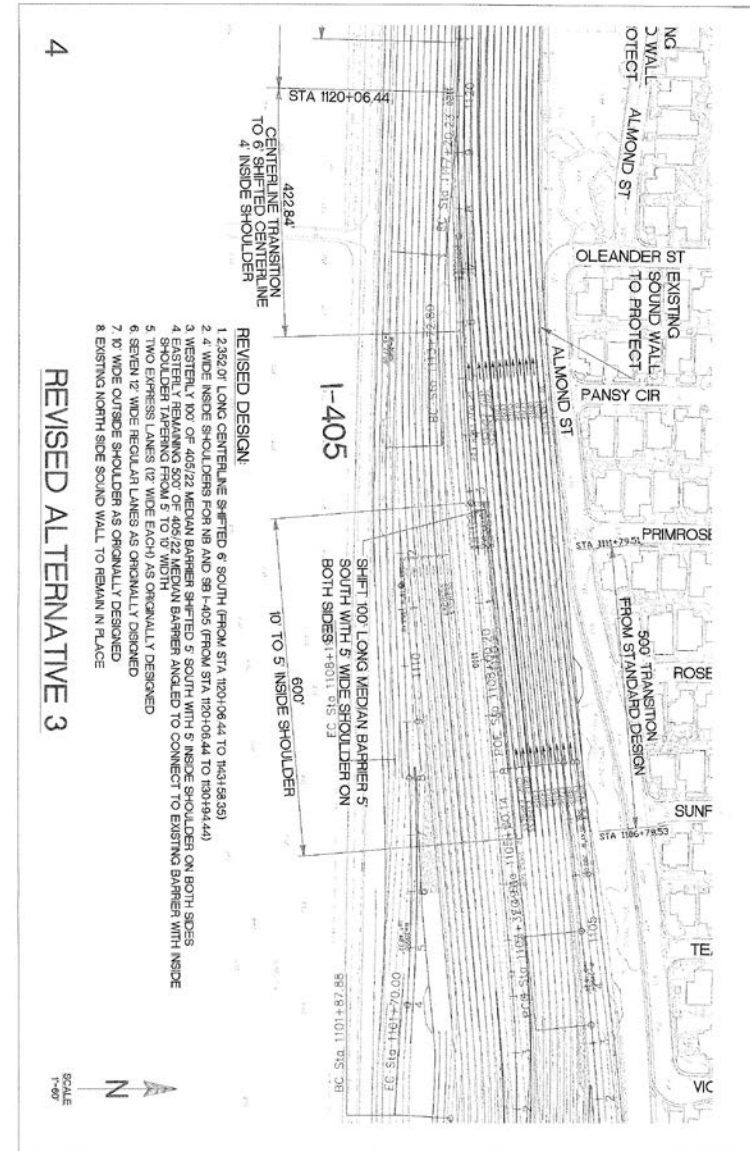
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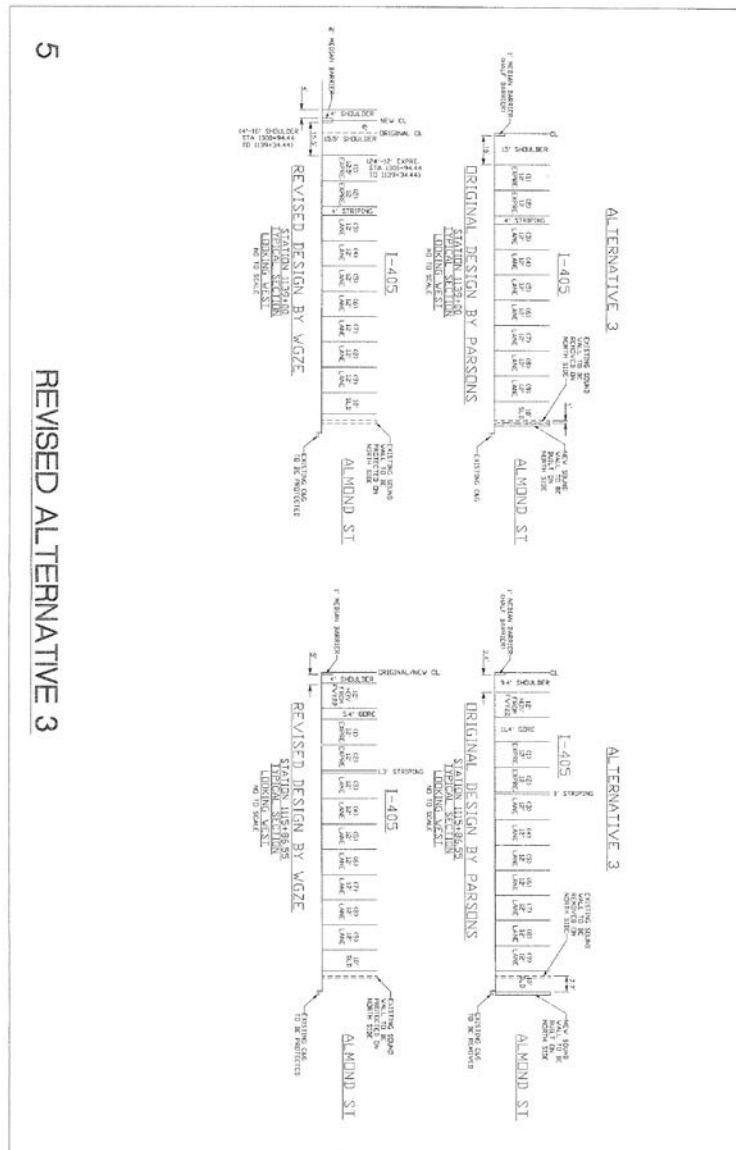


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# Attachment B

Council on Environmental Quality  
Appropriate Use of Mitigation and Monitoring and Clarifying the  
Appropriate Use of Mitigated Findings of No Significant Impact  
January 14, 2011



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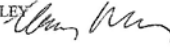
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EXECUTIVE OFFICE OF THE PRESIDENT  
COUNCIL ON ENVIRONMENTAL QUALITY  
WASHINGTON, D.C. 20503

January 14, 2011

MEMORANDUM FOR HEADS OF FEDERAL DEPARTMENTS AND AGENCIES

FROM: NANCY H. SUTLEY   
Chair

SUBJECT: Appropriate Use of Mitigation and Monitoring and Clarifying the  
Appropriate Use of Mitigated Findings of No Significant Impact

The Council on Environmental Quality (CEQ) is issuing this guidance for Federal departments and agencies on establishing, implementing, and monitoring mitigation commitments identified and analyzed in Environmental Assessments, Environmental Impact Statements, and adopted in the final decision documents. This guidance also clarifies the appropriate use of mitigated "Findings of No Significant Impact" under the National Environmental Policy Act (NEPA). This guidance is issued in accordance with NEPA, 42 U.S.C. § 4321 et seq., and the CEQ Regulations for Implementing the Procedural Provisions of NEPA (CEQ Regulations), 40 CFR Parts 1500-1508.<sup>1</sup> The guidance explains the requirements of NEPA and the CEQ Regulations, describes CEQ policies, and recommends procedures for agencies to use to help them comply with the requirements of NEPA and the CEQ Regulations when they establish mitigation planning and implementation procedures.<sup>2</sup>

<sup>1</sup> The Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (CEQ Regulations) are available on [www.nepa.gov](http://www.nepa.gov) at [ceq.hss.doe.gov/ceq\\_regulations/regulations.html](http://ceq.hss.doe.gov/ceq_regulations/regulations.html).

<sup>2</sup> CEQ is issuing this guidance as an exercise of its duties and functions under section 204 of the National Environmental Policy Act (NEPA), 42 U.S.C. § 4344, and Executive Order No. 11,514, 35 Fed. Reg. 4,247 (Mar. 5, 1970), as amended by Executive Order No. 11,991, 42 Fed. Reg. 26,927 (May 24, 1977). This guidance is not a rule or regulation, and the recommendations it contains may not apply to a particular situation based upon the individual facts and circumstances. This guidance does not change or substitute for any law, regulation, or other legally binding requirement and is not legally enforceable. The use of language such as "recommend," "may," "should," and "can" is intended to describe CEQ policies and recommendations. The use of mandatory terminology such as "must" and "required" is intended to describe controlling requirements under the terms of NEPA and the CEQ Regulations, but this document does not independently establish legally binding requirements.

NEPA was enacted to promote efforts that will prevent or eliminate damage to the human environment.<sup>3</sup> Mitigation measures can help to accomplish this goal in several ways. Many Federal agencies and applicants include mitigation measures as integral components of a proposed project's design. Agencies also consider mitigation measures as alternatives when developing Environmental Assessments (EA) and Environmental Impact Statements (EIS). In addition, agencies have increasingly considered mitigation measures in EAs to avoid or lessen potentially significant environmental effects of proposed actions that would otherwise need to be analyzed in an EIS.<sup>4</sup> This use of mitigation may allow the agency to comply with NEPA's procedural requirements by issuing an EA and a Finding of No Significant Impact (FONSI), or "mitigated FONSI," based on the agency's commitment to ensure the mitigation that supports the FONSI is performed, thereby avoiding the need to prepare an EIS.

This guidance addresses mitigation that an agency has committed to implement as part of a project design and mitigation commitments informed by the NEPA review process. As discussed in detail in Section I, below, agencies may commit to mitigation measures considered as alternatives in an EA or EIS so as to achieve an environmentally preferable outcome. Agencies may also commit to mitigation measures to support a mitigated FONSI, so as to complete their review of potentially significant environmental impacts without preparing an EIS. When agencies do not document and, in important cases, monitor mitigation commitments to determine if the mitigation was implemented or effective, the use of mitigation may fail to advance NEPA's purpose of ensuring informed and transparent environmental decisionmaking. Failure to document and monitor mitigation may also undermine the integrity of the NEPA review. These concerns and the need for guidance on this subject have long been recognized.<sup>5</sup> While

<sup>3</sup> 42 U.S.C. § 4321 (stating that the purposes of NEPA include promoting efforts which will prevent or eliminate damage to the environment).

<sup>4</sup> This trend was noted in CEQ's Twenty-Fifth Anniversary report on the effectiveness of NEPA implementation. See CEQ, "NEPA: A Study of its Effectiveness After Twenty-Five Years" 20 (1997), available at [ceq.hss.doe.gov/nepa/nepa25fn.pdf](http://ceq.hss.doe.gov/nepa/nepa25fn.pdf).

<sup>5</sup> See, e.g., CEQ, 1987-1988 Annual Report, available at [www.slideshare.net/whitehouse/august-1987-1988-the-eighteenth-annual-report-of-the-council-on-environmental-quality](http://www.slideshare.net/whitehouse/august-1987-1988-the-eighteenth-annual-report-of-the-council-on-environmental-quality) (stating that CEQ would issue guidance on the propriety of an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) rather than requiring an Environmental Impact Statement (EIS) when the environmental effects of a proposal are significant but mitigation reduces those impacts to less than significant levels). In 2002, CEQ convened a Task Force on Modernizing NEPA Implementation, which recommended that CEQ issue guidance clarifying the requirements for public involvement, alternatives, and mitigation for actions that warrant longer EAs including those with mitigated FONSI. CEQ NEPA Task Force, "Modernizing NEPA Implementation" 75 (2003), available at [ceq.hss.doe.gov/nftr/report/totaldoc.html](http://ceq.hss.doe.gov/nftr/report/totaldoc.html). NEPA experts and public stakeholders have expressed broad support for this recommendation, calling for consideration of monitoring and public involvement in the use of mitigated FONSI. CEQ, "The Public and Experts"

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this guidance is designed to address these concerns, CEQ also acknowledges that NEPA itself does not create a general substantive duty on Federal agencies to mitigate adverse environmental effects.<sup>6</sup>

Accordingly, in conjunction with the 40<sup>th</sup> Anniversary of NEPA, CEQ announced that it would issue this guidance to clarify the appropriateness of mitigated FONSIs and the importance of monitoring environmental mitigation commitments.<sup>7</sup> This new guidance affirms CEQ's support for the appropriate use of mitigated FONSIs, and accordingly amends and supplements previously issued guidance.<sup>8</sup> This guidance is intended to enhance the integrity and credibility of the NEPA process and the information upon which it relies.

CEQ provides several broad recommendations in Section II, below, to help improve agency consideration of mitigation in EISs and EAs. Agencies should not commit to mitigation measures considered in an EIS or EA absent the authority or expectation of resources to ensure that the mitigation is performed. In the decision documents concluding their environmental reviews, agencies should clearly identify any mitigation measures adopted as agency commitments or otherwise relied upon (to the extent consistent with agency authority or other legal authority), so as to ensure the integrity of the NEPA process and allow for greater transparency.

Review of the National Environmental Policy Act Task Force Report "Modernizing NEPA Implementation" 7 (2004), available at [ceq.hss.doe.gov/nf/CEQ\\_Draft\\_Final\\_Roundtable\\_Report.pdf](http://ceq.hss.doe.gov/nf/CEQ_Draft_Final_Roundtable_Report.pdf); see also CEQ, "Rocky Mountain Roundtable Report" 8 (2004), available at [ceq.hss.doe.gov/nf/RockyMtnRoundTableReport.pdf](http://ceq.hss.doe.gov/nf/RockyMtnRoundTableReport.pdf) (noting that participants in a regional roundtable on NEPA modernization identified "developing a means to enforce agency commitments to monitoring and mitigation" as one of the top five aspects of NEPA implementation needing immediate attention); "Eastern Round Table Report" 4 (2003), available at [ceq.hss.doe.gov/nf/EasternRoundTableReport.pdf](http://ceq.hss.doe.gov/nf/EasternRoundTableReport.pdf) (reporting that, according to several panelists at a regional roundtable, "parties responsible for monitoring the effects of . . . mitigation measures are rarely identified or easily held accountable," and that a lack of monitoring impedes agencies' ability to address the cumulative effects of EA actions).

<sup>6</sup> *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989).

<sup>7</sup> CEQ, "New Proposed NEPA Guidance and Steps to Modernize and Reinvent NEPA" (Feb. 18, 2010), available at [www.whitehouse.gov/administration/eop/ceq/initiatives/nepa](http://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa).

<sup>8</sup> This previous guidance is found in CEQ, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 Fed. Reg. 18,026 (Mar. 23, 1981), available at [ceq.eh.doe.gov/nepa/regs/40/40P1.htm](http://ceq.eh.doe.gov/nepa/regs/40/40P1.htm) (suggesting that the existence of mitigation measures developed during the scoping or EA stages "does not obviate the need for an EIS").

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Section III emphasizes that agencies should establish implementation plans based on the importance of the project and its projected effects. Agencies should create new, or strengthen existing, monitoring to ensure that mitigation commitments are implemented. Agencies should also use effectiveness monitoring to learn if the mitigation is providing the benefits predicted. Importantly, agencies should encourage public participation and accountability through proactive disclosure of, and provision of access to, agencies' mitigation commitments as well as mitigation monitoring reports and related documents.

Although the recommendations in this guidance are broad in nature, agencies should establish, in their NEPA implementing procedures and/or guidance, specific procedures that create systematic accountability and the mechanisms to accomplish these goals.<sup>9</sup> This guidance is intended to assist agencies with the development and review of their NEPA procedures, by specifically recommending:

- How to ensure that mitigation commitments are implemented;
- How to monitor the effectiveness of mitigation commitments;
- How to remedy failed mitigation; and
- How to involve the public in mitigation planning.

Finally, to assist agencies in the development of their NEPA implementing procedures, an overview of relevant portions of the Department of the Army NEPA regulations is appended to this guidance as an example for agencies to consider when incorporating the recommendations of this guidance as requirements in their NEPA programs and procedures.<sup>10</sup>

#### I. THE IMPORTANCE OF MITIGATION UNDER NEPA

Mitigation is an important mechanism Federal agencies can use to minimize the potential adverse environmental impacts associated with their actions. As described in the CEQ Regulations, agencies can use mitigation to reduce environmental impacts in several ways. Mitigation includes:

- Avoiding an impact by not taking a certain action or parts of an action;
- Minimizing an impact by limiting the degree or magnitude of the action and its implementation;
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating an impact over time, through preservation and maintenance operations during the life of the action; and

<sup>9</sup> 40 CFR § 1507.3 (requiring agencies to issue, and continually review, policies and procedures to implement NEPA in conformity with NEPA and CEQ Regulations).

<sup>10</sup> See *id.*; see also *id.* § 1507.2 (requiring agencies to have personnel and other resources available to implement NEPA reviews and meet their NEPA responsibilities).

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- Compensating for an impact by replacing or providing substitute resources or environments.<sup>11</sup>

Federal agencies typically develop mitigation as a component of a proposed action, or as a measure considered in the course of the NEPA review conducted to support agency decisionmaking processes, or both. In developing mitigation, agencies necessarily and appropriately rely upon the expertise and experience of their professional staff to assess mitigation needs, develop mitigation plans, and oversee mitigation implementation. Agencies may also rely on outside resources and experts for information about the ecosystem functions and values to be protected or restored by mitigation, to ensure that mitigation has the desired effects and to develop appropriate monitoring strategies. Any outside parties consulted should be neutral parties without a financial interest in implementing the mitigation and monitoring plans, and should have expert knowledge, training, and experience relevant to the resources potentially affected by the actions and—if possible—the potential effects from similar actions.<sup>12</sup> Further, when agencies delegate responsibility for preparing NEPA analyses and documentation, or when other entities (such as applicants) assume such responsibility, CEQ recommends that any experts employed to develop mitigation and monitoring should have the kind of expert knowledge, training, and experience described above.

The sections below clarify practices Federal agencies should use when they employ mitigation in three different contexts: as components of project design; as mitigation alternatives considered in an EA or an EIS and adopted in related decision documents; and as measures identified and committed to in an EA as necessary to support a mitigated FONSI. CEQ encourages agencies to commit to mitigation to achieve environmentally preferred outcomes, particularly when addressing unavoidable adverse environmental impacts. Agencies should not commit to mitigation, however, unless they have sufficient legal authorities and expect there will be necessary resources available to perform or ensure the performance of the mitigation. The agency's own underlying authority may provide the basis for its commitment to implement and monitor the mitigation. Alternatively, the authority for the mitigation may derive from legal requirements that are enforced by other Federal, state, or local government entities (e.g., air or water permits administered by local or state agencies).

A. Mitigation Incorporated into Project Design

Many Federal agencies rely on mitigation to reduce adverse environmental impacts as part of the planning process for a project, incorporating mitigation as integral components of a proposed project design before making a determination about the

<sup>11</sup> *Id.* § 1508.20 (defining mitigation to include these activities).

<sup>12</sup> See *id.* § 1506.5 (providing that agencies are responsible for the accuracy of environmental information submitted by applicants for use in EISs and EAs, and requiring contractors selected to prepare EISs to execute disclosure statement specifying that they have no financial or other interest in the outcome of the project).

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significance of the project's environmental impacts.<sup>13</sup> Such mitigation can lead to an environmentally preferred outcome and in some cases reduce the projected impacts of agency actions to below a threshold of significance. An example of mitigation measures that are typically included as part of the proposed action are agency standardized best management practices such as those developed to prevent storm water runoff or fugitive dust emissions at a construction site.

Mitigation measures included in the project design are integral components of the proposed action, are implemented with the proposed action, and therefore should be clearly described as part of the proposed action that the agency will perform or require to be performed. Consequently, the agency can address mitigation early in the decisionmaking process and potentially conduct a less extensive level of NEPA review.

B. Mitigation Alternatives Considered in Environmental Assessments and Environmental Impact Statements

Agencies are required, under NEPA, to study, develop, and describe appropriate alternatives when preparing EAs and EISs.<sup>14</sup> The CEQ Regulations specifically identify procedures agencies must follow when developing and considering mitigation alternatives when preparing an EIS. When an agency prepares an EIS, it must include mitigation measures (not already included in the proposed action or alternatives) among the alternatives compared in the EIS.<sup>15</sup> Each EIS must contain a section analyzing the environmental consequences of the proposed action and its alternatives, including "[m]eans to mitigate adverse environmental impacts."<sup>16</sup>

When a Federal agency identifies a mitigation alternative in an EA or an EIS, it may commit to implement that mitigation to achieve an environmentally-preferable outcome. Agencies should not commit to mitigation measures considered and analyzed in an EIS or EA if there are insufficient legal authorities, or it is not reasonable to foresee the availability of sufficient resources, to perform or ensure the performance of the mitigation. Furthermore, the decision document following the EA should—and a Record of Decision (ROD) must—identify those mitigation measures that the agency is adopting

<sup>13</sup> CEQ NEPA Task Force, "Modernizing NEPA Implementation" at 69.

<sup>14</sup> 42 U.S.C. § 4332(2)(C) (mandating that agencies' detailed statements must include alternatives to the proposed action); *id.* § 4332(E) (requiring agencies to study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources).

<sup>15</sup> 40 CFR § 1502.14(f) (listing mitigation measures as one of the required components of the alternatives included in an EIS); *id.* § 1508.25(b)(3) (defining the "scope" of an EIS to include mitigation measures).

<sup>16</sup> *Id.* § 1502.16(h).

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and committing to implement, including any monitoring and enforcement program applicable to such mitigation commitments.<sup>17</sup>

C. Mitigation Commitments Analyzed in Environmental Assessments to Support a Mitigated FONSI

When preparing an EA, many agencies develop and consider committing to mitigation measures to avoid, minimize, rectify, reduce, or compensate for potentially significant adverse environmental impacts that would otherwise require full review in an EIS. CEQ recognizes the appropriateness, value, and efficacy of providing for mitigation to reduce the significance of environmental impacts. Consequently, when such mitigation measures are available and an agency commits to perform or ensure the performance of them, then these mitigation commitments can be used to support a FONSI, allowing the agency to conclude the NEPA process and proceed with its action without preparing an EIS.<sup>18</sup> An agency should not commit to mitigation measures necessary for a mitigated FONSI if there are insufficient legal authorities, or it is not reasonable to foresee the availability of sufficient resources, to perform or ensure the performance of the mitigation.<sup>19</sup>

Mitigation commitments needed to lower the level of impacts so that they are not significant should be clearly described in the mitigated FONSI document and in any other relevant decision documents related to the proposed action. Agencies must provide for appropriate public involvement during the development of the EA and FONSI.<sup>20</sup>

<sup>17</sup> *Id.* § 1505.2(c) (providing that a record of decision must state whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not; and providing that a monitoring and enforcement program must be adopted and summarized where applicable for any mitigation).

<sup>18</sup> This guidance approves of the use of the "mitigated FONSI" when the NEPA process results in enforceable mitigation measures. It thereby amends and supplements previously issued CEQ guidance that suggested that the existence of mitigation measures developed during the scoping or EA stages "does not obviate the need for an EIS." See CEQ, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 Fed. Reg. 18,026 (Mar. 23, 1981), available at [ceq.eh.doe.gov/nepa/regs/40/40P1.htm](http://ceq.eh.doe.gov/nepa/regs/40/40P1.htm).

<sup>19</sup> When agencies consider and decide on an alternative outside their jurisdiction (as discussed in 40 CFR § 1502.14(c)), they should identify the authority for the mitigation and consider the consequences of it not being implemented.

<sup>20</sup> 40 CFR § 1501.4(b) (requiring agencies to involve environmental agencies, applicants, and the public, to the extent practicable); *id.* § 1501.4(e)(1) (requiring agencies to make FONSI available to the affected public as specified in § 1506.6); *id.* § 1501.4(c)(2) (requiring agencies to make FONSI available for public review for thirty days before making any final determination on whether to prepare an EIS or proceed with an action when the proposed action is, or is closely similar to, one which normally requires the

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Furthermore, in addition to those situations where a 30-day public review of the FONSI is required,<sup>21</sup> agencies should make the EA and FONSI available to the public (e.g., by posting them on an agency website). Providing the public with clear information about agencies' mitigation commitments helps ensure the value and integrity of the NEPA process.

II. ENSURING THAT MITIGATION COMMITMENTS ARE IMPLEMENTED

Federal agencies should take steps to ensure that mitigation commitments are actually implemented. Consistent with their authority, agencies should establish internal processes to ensure that mitigation commitments made on the basis of any NEPA analysis are carefully documented and that relevant funding, permitting, or other agency approvals and decisions are made conditional on performance of mitigation commitments.

Agency NEPA implementing procedures should require clear documentation of mitigation commitments considered in EAs and EISs prepared during the NEPA process and adopted in their decision documents. Agencies should ensure that the expertise and professional judgment applied in determining the appropriate mitigation commitments are described in the EA or EIS, and that the NEPA analysis considers when and how those mitigation commitments will be implemented.

Agencies should clearly identify commitments to mitigation measures designed to achieve environmentally preferable outcomes in their decision documents. They should also identify mitigation commitments necessary to reduce impacts, where appropriate, to a level necessary for a mitigated FONSI. In both cases, mitigation commitments should be carefully specified in terms of measurable performance standards or expected results, so as to establish clear performance expectations.<sup>22</sup> The agency should also specify the

preparation of an EIS under agency NEPA implementing procedures, or when the nature of the proposed action is one without precedent); *id.* § 1506.6 (requiring agencies to make diligent efforts to involve the public in preparing and implementing their NEPA procedures).

<sup>21</sup> *Id.* § 1501.4(e)(2).

<sup>22</sup> In 2001, the Committee on Mitigating Wetland Losses, through the National Research Council (NRC), conducted a nationwide study evaluating compensatory mitigation, focusing on whether the process is achieving the overall goal of "restoring and maintaining the quality of the nation's waters." NRC Committee on Mitigating Wetland Losses, "Compensating for Wetland Losses Under the Clean Water Act" 2 (2001). The study's recommendations were incorporated into the 2008 Final Compensatory Mitigation Rule promulgated jointly by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency. See U.S. Army Corps of Engineers & U.S. Environmental Protection Agency, "Compensatory Mitigation for Losses of Aquatic Resources," 73 Fed. Reg. 19,594 (Apr. 10, 2008).

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timeframe for the agency action and the mitigation measures in its decision documents, to ensure that the intended start date and duration of the mitigation commitment is clear. When an agency funds, permits, or otherwise approves actions, it should also exercise its available authorities to ensure implementation of any mitigation commitments by including appropriate conditions on the relevant grants, permits, or approvals.

CEQ views funding for implementation of mitigation commitments as critical to ensuring informed decisionmaking. For mitigation commitments that agencies will implement directly, CEQ recognizes that it may not be possible to identify funds from future budgets; however, a commitment to seek funding is considered essential and if it is reasonably foreseeable that funding for implementation of mitigation may be unavailable at any time during the life of the project, the agency should disclose in the EA or EIS the possible lack of funding and assess the resultant environmental effects. If the agency has disclosed and assessed the lack of funding, then unless the mitigation is essential to a mitigated FONSI or necessary to comply with another legal requirement, the action could proceed. If the agency committing to implementing mitigation has not disclosed and assessed the lack of funding, and the necessary funding later becomes unavailable, then the agency should not move forward with the proposed action until funding becomes available or the lack of funding is appropriately assessed (see Section III, below).

A. Establishing a Mitigation Monitoring Program

Federal agencies must consider reasonably foreseeable future impacts and conditions in a constantly evolving environment. Decisionmakers will be better able to adapt to changing circumstances by creating a sound mitigation implementation plan and through ongoing monitoring of environmental impacts and their mitigation. Monitoring can improve the quality of overall agency decisionmaking by providing feedback on the effectiveness of mitigation techniques. A comprehensive approach to mitigation planning, implementation, and monitoring will therefore help agencies realize opportunities for reducing environmental impacts through mitigation, advancing the integrity of the entire NEPA process. These approaches also serve NEPA's goals of ensuring transparency and openness by making relevant and useful environmental information available to decisionmakers and the public.<sup>23</sup>

Adaptive management can help an agency take corrective action if mitigation commitments originally made in NEPA and decision documents fail to achieve projected environmental outcomes and there is remaining federal action. Agencies can, in their NEPA reviews, establish and analyze mitigation measures that are projected to result in the desired environmental outcomes, and can then identify those mitigation principles or measures that it would apply in the event the initial mitigation commitments are not implemented or effective. Such adaptive management techniques can be advantageous to both the environment and the agency's project goals.<sup>24</sup> Agencies can also, short of

<sup>23</sup> 40 CFR § 1500.1(b).

<sup>24</sup> See CEQ NEPA Task Force, "Modernizing NEPA Implementation" at 44.

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adaptive management, analyze specific mitigation alternatives that could take the place of mitigation commitments in the event the commitment is not implemented or effective.

Monitoring is fundamental for ensuring the implementation and effectiveness of mitigation commitments, meeting legal and permitting requirements, and identifying trends and possible means for improvement. Under NEPA, a Federal agency has a continuing duty to ensure that new information about the environmental impact of its proposed actions is taken into account, and that the NEPA review is supplemented when significant new circumstances or information arise that are relevant to environmental concerns and bear on the proposed action or its impacts.<sup>25</sup> For agency decisions based on an EIS, the CEQ Regulations explicitly require that "a monitoring and enforcement program shall be adopted . . . where applicable for any mitigation."<sup>26</sup> In addition, the CEQ Regulations state that agencies may "provide for monitoring to assure that their decisions are carried out and should do so in important cases."<sup>27</sup> Accordingly, an agency should also commit to mitigation monitoring in important cases when relying upon an EA and mitigated FONSI. Monitoring is essential in those important cases where the mitigation is necessary to support a FONSI and thus is part of the justification for the agency's determination not to prepare an EIS.

Agencies are expected to apply professional judgment and the rule of reason when identifying those cases that are important and warrant monitoring, and when determining the type and extent of monitoring they will use to check on the progress made in implementing mitigation commitments as well as their effectiveness. In cases that are less important, the agency should exercise its discretion to determine what level of monitoring, if any, is appropriate. The following are examples of factors that agencies should consider to determine importance:

- Legal requirements of statutes, regulations, or permits;
- Human health and safety;
- Protected resources (e.g., parklands, threatened or endangered species, cultural or historic sites) and the proposed action's impacts on them;
- Degree of public interest in the resource or public debate over the effects of the proposed action and any reasonable mitigation alternatives on the resource; and
- Level of intensity of projected impacts.

Once an agency determines that it will provide for monitoring in a particular case, monitoring plans and programs should be described or incorporated by reference in the

<sup>25</sup> 40 CFR § 1502.9(c) (requiring supplementation of EISs when there are substantial changes to the proposed action, or significant new information or circumstances arise that are relevant to the environmental effects of the proposed action).

<sup>26</sup> *Id.* § 1505.2(c).

<sup>27</sup> *Id.* § 1505.3.

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agency's decision documents.<sup>28</sup> Agencies have discretion, within the scope of their authority, to select an appropriate form and method for monitoring, but they should identify the monitoring area and establish the appropriate monitoring system.<sup>29</sup> The form and method of monitoring can be informed by an agency's past monitoring plans and programs that tracked impacts on similar resources, as well as plans and programs used by other agencies or entities, particularly those with an interest in the resource being monitored. For mitigation commitments that warrant rigorous oversight, an Environmental Management System (EMS), or other data or management system could serve as a useful way to integrate monitoring efforts effectively.<sup>30</sup> Other possible monitoring methods include agency-specific environmental monitoring, compliance assessment, and auditing systems. For activities involving third parties (e.g., permittees or grantees), it may be appropriate to require the third party to perform the monitoring as long as a clear accountability and oversight framework is established. The monitoring program should be implemented together with a review process and a system for reporting results.

Regardless of the method chosen, agencies should ensure that the monitoring program tracks whether mitigation commitments are being performed as described in the NEPA and related decision documents (i.e., implementation monitoring), and whether the mitigation effort is producing the expected outcomes and resulting environmental effects (i.e., effectiveness monitoring). Agencies should also ensure that their mitigation monitoring procedures appropriately provide for public involvement. These recommendations are explained in more detail below.

<sup>28</sup> The mitigation plan and program should be described to the extent possible based on available and reasonably foreseeable information in cases where the NEPA analysis and documentation are completed prior to final design of a proposed project.

<sup>29</sup> The Department of the Army regulations provide an example of this approach. See 32 CFR part 651 App. C. These regulations are summarized in the Appendix to this guidance.

<sup>30</sup> An EMS provides a systematic framework for a Federal agency to monitor and continually improve its environmental performance through audits, evaluations of legal and other requirements, and management reviews. The potential for EMS to support NEPA work is further addressed in CEQ, "Aligning National Environmental Policy Act Processes with Environmental Management Systems" 4 (2007) available at [ceq.hss.doe.gov/nepa/nepapubs/Aligning\\_NEPA\\_Processes\\_with\\_Environmental\\_Management\\_Systems\\_2007.pdf](http://ceq.hss.doe.gov/nepa/nepapubs/Aligning_NEPA_Processes_with_Environmental_Management_Systems_2007.pdf) (discussing the use of EMSs to track implementation and monitoring of mitigation). In 2001, the Department of the Army announced that it would implement a recognized environmental management standard, ISO 14001, across Army installations. ISO 14001 represents a standardized system to plan, track, and monitor environmental performance within the agency's operations. To learn more about how EMS implementation has resulted in an effective EMS for monitoring purposes at an Army installation, see the Sustainability website for the Army's Fort Lewis installation, available at [sustainablefortlewis.army.mil](http://sustainablefortlewis.army.mil).

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B. Monitoring Mitigation Implementation

A successful monitoring program will track the implementation of mitigation commitments to determine whether they are being performed as described in the NEPA documents and related decision documents. The responsibility for developing an implementation monitoring program depends in large part upon who will actually perform the mitigation—the lead Federal agency or cooperating agency; the applicant, grantee, or permit holder; another responsible entity or cooperative non-Federal partner; or a combination of these. The lead agency should ensure that information about responsible parties, mitigation requirements, as well as any appropriate enforcement clauses are included in documents such as authorizations, agreements, permits, financial assistance awards, or contracts.<sup>31</sup> Ultimate monitoring responsibility rests with the lead Federal agency or agencies to assure that monitoring is occurring when needed and that results are being properly considered. The project's lead agency can share monitoring responsibility with joint lead or cooperating agencies or other entities, such as applicants or grantees. The responsibility should be clearly described in the NEPA documents or associated decision documents, or related documents describing and establishing the monitoring requirements or expectations.

C. Monitoring the Effectiveness of Mitigation

Effectiveness monitoring tracks the success of a mitigation effort in achieving expected outcomes and environmental effects. Completing environmental data collection and analyses prior to project implementation provides an understanding of the baseline conditions for each potentially affected resource for reference when determining whether the predicted efficacy of mitigation commitments is being achieved. Agencies can rely on agency staff and outside experts familiar with the predicted environmental impacts to develop the means to monitor mitigation effectiveness, in the same way that they can rely on agency and outside experts to develop and evaluate the effectiveness of mitigation (see Section I, above).

When monitoring mitigation, agencies should consider drawing on sources of information available from the agency, from other Federal agencies, and from state, local, and tribal agencies, as well as from non-governmental sources such as local organizations, academic institutions, and non-governmental organizations. Agencies should especially consider working with agencies responsible for overseeing land management and impacts to specific resources. For example, agencies could consult with the U.S. Fish and Wildlife and National Marine Fisheries Services (for information to evaluate potential impacts to threatened and endangered species) and with State Historic Preservation Officers (for information to evaluate potential impacts to historic structures).

<sup>31</sup> Such enforcement clauses, including appropriate penalty clauses, should be developed as allowable under the applicable statutory and regulatory authorities.

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D. The Role of the Public

Public involvement is a key procedural requirement of the NEPA review process, and should be fully provided for in the development of mitigation and monitoring procedures.<sup>32</sup> Agencies are also encouraged, as a matter of transparency and accountability, to consider including public involvement components in their mitigation monitoring programs. The agencies' experience and professional judgment are key to determining the appropriate level of public involvement. In addition to advancing accountability and transparency, public involvement may provide insight or perspective for improving mitigation activities and monitoring. The public may also assist with actual monitoring through public-private partnership programs.

Agencies should provide for public access to mitigation monitoring information consistent with NEPA and the Freedom of Information Act (FOIA).<sup>33</sup> NEPA and the CEQ Regulations incorporate the FOIA by reference to require agencies to provide public access to releasable documents related to EISs, which may include documents regarding mitigation monitoring and enforcement.<sup>34</sup> The CEQ Regulations also require agencies to involve the public in the EA preparation process to the extent practicable and in certain cases to make a FONSI available for public review before making its final determination on whether it will prepare an EIS or proceed with the action.<sup>35</sup> Consequently, agencies should involve the public when preparing EAs and mitigated FONSIs.<sup>36</sup> NEPA further requires all Federal agencies to make information useful for restoring, maintaining, and

<sup>32</sup> 40 CFR § 1506.6 (requiring agencies to make diligent efforts to involve the public in preparing and implementing their NEPA procedures).

<sup>33</sup> 5 U.S.C. § 552.

<sup>34</sup> 42 U.S.C. § 4332(2)(C) (requiring Federal agencies to make EISs available to the public as provided by the FOIA); 40 CFR § 1506.6(f) (requiring agencies to make EISs, comments received, and any underlying documents available to the public pursuant to the provisions of the FOIA without regard to the exclusion for interagency memoranda where such memoranda transmit comments of Federal agencies on the environmental impact of the proposed action).

<sup>35</sup> 40 CFR § 1501.4(b) (requiring agencies to involve environmental agencies, applicants, and the public, to the extent practicable); *id.* § 1501.4(e)(1) (requiring agencies to make FONSIs available to the affected public as specified in § 1506.6); *id.* § 1501.4(e)(2) (requiring agencies to make a FONSI available for public review for thirty days before making its final determination on whether it will prepare an EIS or proceed with the action when the nature of the proposed action is, or is similar to, an action which normally requires the preparation of an EIS); *id.* § 1506.6 (requiring agencies to make diligent efforts to involve the public in preparing and implementing their NEPA procedures).

<sup>36</sup> *Id.* § 1501.4.

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enhancing the quality of the environment available to States, counties, municipalities, institutions, and individuals.<sup>37</sup> This requirement can include information on mitigation and mitigation monitoring.

Beyond these requirements, agencies are encouraged to make proactive, discretionary release of mitigation monitoring reports and other supporting documents, and to make responses to public inquiries regarding mitigation monitoring readily available to the public through online or print media. This recommendation is consistent with the President's Memorandum on Transparency and Open Government directing agencies to take affirmative steps to make information public without waiting for specific requests for information.<sup>38</sup> The Open Government Directive, issued by the Office of Management and Budget in accordance with the President's Memorandum, further directs agencies to use their web sites and information technology capabilities to disseminate, to the maximum extent practicable, useful information under FOIA, so as to promote transparency and accountability.<sup>39</sup>

Agencies should exercise their judgment to ensure that the methods and media used to provide mitigation and monitoring information are commensurate with the importance of the action and the resources at issue, taking into account any risks of harm to affected resources. In some cases, agencies may need to balance competing privacy or confidentiality concerns (e.g., protecting confidential business information or the location of sacred sites) with the benefits of public disclosure.

III. REMEDYING INEFFECTIVE OR NON-IMPLEMENTED MITIGATION

Through careful monitoring, agencies may discover that mitigation commitments have not been implemented, or have not had the environmental results predicted in the NEPA and decision documents. Agencies, having committed to mitigation, should work to remedy such inadequacies. It is an agency's underlying authority or other legal authority that provides the basis for the commitment to implement mitigation and monitor its effectiveness. As discussed in Section I, agencies should not commit to mitigation considered in an EIS or EA unless there are sufficient legal authorities and they expect the resources to be available to perform or ensure the performance of the mitigation. In some cases, as discussed in Section II, agencies may exercise their authority to make

<sup>37</sup> 42 U.S.C. § 4332(2)(G).

<sup>38</sup> Presidential Memorandum for Heads of Executive Departments and Agencies Concerning the Freedom of Information Act, 74 Fed. Reg. 4,683 (Jan. 21, 2009); *accord* DOJ, "Memorandum for Heads of Executive Departments and Agencies Concerning the Freedom of Information Act" (Mar. 19, 2009), available at [www.usdoj.gov/ag/foia-memo-march2009.pdf](http://www.usdoj.gov/ag/foia-memo-march2009.pdf).

<sup>39</sup> Office of Mgmt. & Budget, Executive Office of the President, "Open Government Directive" (Dec. 8, 2009), available at [www.whitehouse.gov/open/documents/open-government-directive](http://www.whitehouse.gov/open/documents/open-government-directive).



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relevant funding, permitting, or other agency approvals and decisions conditional on the performance of mitigation commitments by third parties. It follows that an agency must rely on its underlying authority and available resources to take remedial steps. Agencies should consider taking remedial steps as long as there remains a pending Federal decision regarding the project or proposed action. Agencies may also exercise their legal authority to enforce conditions placed on funding, grants, permits, or other approvals.

If a mitigation commitment is simply not undertaken or fails to mitigate the environmental effects as predicted, the responsible agency should further consider whether it is necessary to prepare supplemental NEPA analysis and documentation.<sup>40</sup> The agency determination would be based upon its expertise and judgment regarding environmental consequences. Much will depend upon the agency's determination as to what, if any, portions of the Federal action remain and what opportunities remain to address the effects of the mitigation failure. In cases where an EIS or a supplementary EA or EIS is required, the agency must avoid actions that would have adverse environmental impacts and limit its choice of reasonable alternatives during the preparation of an EIS.<sup>41</sup>

In cases where there is no remaining agency action to be taken, and the mitigation has not been fully implemented or has not been as effective as predicted, it may not be appropriate to supplement the original NEPA analysis and documentation. However, it would be appropriate for future NEPA analyses of similar proposed actions and relevant programs to consider past experience and address the potential for environmental consequences as a result of mitigation failure. This would ensure that the assumed environmental baselines reflect true conditions, and that similar mitigation is not relied on in subsequent decisions, at least without more robust provisions for adaptive management or analysis of mitigation alternatives that can be applied in the event of mitigation failure.

#### IV. CONCLUSION

This guidance is intended to assist Federal agencies with the development of their NEPA procedures, guidance, and regulations; foster the appropriate use of Findings of No Significant Impact; and ensure that mitigation commitments are appropriately and effectively documented, implemented, and monitored. The guidance also provides Federal agencies with recommended actions in circumstances where mitigation is not

<sup>40</sup> 40 CFR § 1502.9(c) (requiring an agency to prepare supplements to draft or final EISs if the agency makes substantial changes in the proposed action that are relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts).

<sup>41</sup> *Id.* § 1506.1(a) (providing that until an agency issues a Record of Decision, no action concerning the proposal may be taken that would have an adverse environmental impact or limit the choice of reasonable alternatives).

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implemented or fails to have the predicted effect. Questions regarding this guidance should be directed to the CEQ Associate Director for NEPA Oversight.

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APPENDIX

Case Study: Existing Agency Mitigation Regulations & Guidance

A number of agencies have already taken actions to improve their use of mitigation and their monitoring of mitigation commitments undertaken as part of their NEPA processes. For example, the Department of the Army has promulgated regulations implementing NEPA for military installations and programs that include a monitoring and implementation component.<sup>42</sup> These NEPA implementing procedures are notable for their comprehensive approach to ensuring that mitigation proposed in the NEPA review process is completed and monitored for effectiveness. These procedures are described in detail below to illustrate one approach agencies can use to meet the goals of this Guidance.

a. Mitigation Planning

Consistent with existing CEQ guidelines, the Army's NEPA implementing regulations place significant emphasis on the planning and implementation of mitigation throughout the environmental analysis process. The first step of mitigation planning is to seek to avoid or minimize harm.<sup>43</sup> When the analysis proceeds to an EA or EIS, however, the Army regulation requires that any mitigation measures be "clearly assessed and those selected for implementation will be identified in the [FONSI] or the ROD," and that "[t]he proponent must implement those identified mitigations, because they are commitments made as part of the Army decision."<sup>44</sup> This is notable as this mitigation is a binding commitment documented in the agency NEPA decision. In addition, the adoption of mitigation that reduces environmental impacts below the NEPA significance threshold is similarly binding upon the agency.<sup>45</sup> When the mitigation results in a FONSI in a NEPA analysis, the mitigation is considered legally binding.<sup>46</sup> Because these regulations create a clear obligation for the agency to ensure any proposed mitigation adopted in the environmental review process is performed, there is assurance that mitigation will lead to a reduction of environmental impacts in the implementation stage and include binding mechanisms for enforcement.

Another important mechanism in the Army's regulations to assure effective mitigation results is the requirement to fully fund and implement adopted mitigation. It is acknowledged in the regulations that "unless money is actually budgeted and manpower

<sup>42</sup> The Department of the Army promulgated its NEPA implementing procedures as a regulation.

<sup>43</sup> See 40 CFR § 1508.2.

<sup>44</sup> 32 CFR § 651.15(b).

<sup>45</sup> *Id.* § 651.35(g).

<sup>46</sup> *Id.* § 651.15(c).

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assigned, the mitigation does not exist."<sup>47</sup> As a result, a proposed action cannot proceed until all adopted mitigation is fully resourced or until the lack of funding is addressed in the NEPA analysis.<sup>48</sup> This is an important step in the planning process, as mitigation benefits are unlikely to be realized unless financial and planning resources are committed through the NEPA planning process.

b. Mitigation Monitoring

The Army regulations recognize that monitoring is an integral part of any mitigation system.<sup>49</sup> The Army regulations require monitoring plans and implementation programs to be summarized in NEPA documentation, and should consider several important factors. These factors include anticipated changes in environmental conditions or project activities, unexpected outcomes from mitigation, controversy over the selected alternative, potential impacts or adverse effects on federally or state protected resources, and statutory permitting requirements.<sup>50</sup> Consideration of these factors can help prioritize monitoring efforts and anticipate possible challenges.

The Army regulations distinguish between implementation monitoring and effectiveness monitoring. Implementation monitoring ensures that mitigation commitments made in NEPA documentation are implemented. To further this objective, the Army regulations specify that these conditions must be written into any contracts furthering the proposed action. In addition, the agency or unit proposing the action is ultimately responsible for the performance of the mitigation activities.<sup>51</sup> In a helpful appendix to its regulations, the Army outlines guidelines for the creation of an implementation monitoring program to address contract performance, the role of cooperating agencies, and the responsibilities of the lead agency.<sup>52</sup>

The Army's effectiveness monitoring addresses changing conditions inherent in evolving natural systems and the potential for unexpected environmental mitigation outcomes. For this monitoring effort, the Army utilizes its Environmental Management System (EMS) based on the standardized ISO 14001 protocols.<sup>53</sup> The core of this

<sup>47</sup> *Id.* § 651.15(d).

<sup>48</sup> *Id.* § 651.15(d).

<sup>49</sup> *Id.* § 651.15(i).

<sup>50</sup> *Id.* §§ 651.15(h)(1)-(4) Appendix C to 32 CFR § 651, 67 Fed. Reg. 15,290, 15,326-28 (Mar. 29, 2002).

<sup>51</sup> *Id.* § 651.15(i)(1).

<sup>52</sup> See Appendix C to 32 CFR § 651, 67 Fed. Reg. 15,290, 15,326-28 (Mar. 29, 2002).

<sup>53</sup> See also CEQ, "Aligning NEPA Processes with Environmental Management Systems" (2007), available at

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program is the creation of a clear and accountable system for tracking and reporting both quantitative and qualitative measures of the mitigation efforts. An action-forcing response to mitigation failure is essential to the success of any mitigation program. In the context of a mitigated FONSI, the Army regulations provide that if any "identified mitigation measures do not occur, so that significant adverse environmental effects could be reasonably expected to result, the [agency actor] must publish a [Notice of Intent] and prepare an EIS."<sup>54</sup> This is an essential response measure to changed conditions in the proposed agency action. In addition, the Army regulations address potential failures in the mitigation systems identified through monitoring. If mitigation is ineffective, the agency entity responsible should re-examine the mitigation and consider a different approach to mitigation. However, if mitigation is required to reduce environmental impacts below significance levels are found to be ineffective, the regulations contemplate the issuance of a Notice of Intent and preparation of an EIS.<sup>55</sup>

The Army regulations also provide guidance for the challenging task of defining parameters for effectiveness monitoring. Guidelines include identifying a source of expertise, using measurable and replicable technical parameters, conducting a baseline study before mitigation is commenced, using a control to isolate mitigation effects, and, importantly, providing timely results to allow the decision-maker to take corrective action if necessary.<sup>56</sup> In addition, the regulations call for the preparation of an environmental monitoring report to determine the accuracy of the mitigation impact predictions made in the NEPA planning process.<sup>57</sup> The report is essential for agency planning and documentation and promotes public engagement in the mitigation process.

c. *Public Engagement*

The Army regulations seek to integrate robust engagement of the interested public in the mitigation monitoring program. The regulations place responsibility on the entity proposing the action to respond to inquiries from the public and other agencies regarding the status of mitigation adopted in the NEPA process.<sup>58</sup> In addition, the regulations find that "concerned citizens are essential to the credibility of [the] review" of mitigation

[eeq.hss.doe.gov/ncpa/ncpapubs/Aligning\\_NEPA\\_Processes\\_with\\_Environmental\\_Management\\_Systems\\_2007.pdf](http://eeq.hss.doe.gov/ncpa/ncpapubs/Aligning_NEPA_Processes_with_Environmental_Management_Systems_2007.pdf).

<sup>54</sup> 32 CFR § 651.15(c).

<sup>55</sup> See *id.* § 651.35(g) (describing the implementation steps, including public availability and implementation tracking, that must be taken when a FONSI requires mitigation); *id.* § 651.15(k).

<sup>56</sup> See subsections (g)(1)-(5) of Appendix C to 32 CFR § 651, 67 Fed. Reg. at 15,327.

<sup>57</sup> 32 CFR § 651.15(l).

<sup>58</sup> *Id.* § 651.15(b).

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effectiveness.<sup>59</sup> The Army specifies that outreach with the interested public regarding mitigation efforts is to be coordinated by the installation's Environmental Office.<sup>60</sup> These regulations bring the public a step closer to the process by designating an agency source responsible for enabling public participation, and by acknowledging the important role the public can play to ensure the integrity and tracking of the mitigation process. The success of agency mitigation efforts will be bolstered by public access to timely information on NEPA mitigation monitoring.

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<sup>59</sup> *Id.* § 651.15(k).

<sup>60</sup> 32 CFR § 651.15(j).

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**Attachment C**

Cervero, Robert and Hansen, Mark  
Induced Travel Demand and Induced Road Investment  
A Simultaneous Equation Analysis  
Journal of Transport Economics and Policy, Volume 36, Part 3  
September 2002

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## Introduction

The subject of "induced travel" continues to spark interest within the transport research and practitioner communities. Although certain segments of these communities have long maintained that adding road capacity spurs additional traffic, in recent years a spate of papers has sought to quantify the effect and obtained results suggesting that induced effects are stronger than previously believed. Many of these papers employ regional (county or metropolitan level) pooled time-series data on vehicle-miles travelled (VMT), lane-miles of road, population, income, and other relevant variables to infer elasticities of VMT with respect to lane-miles. While a wide range of estimates has been obtained, the majority is in excess of 0.5, suggesting that the most added road capacity is "absorbed" by increases in traffic (Hansen and Huang, 1997; Fulton *et al.* 2000; Noland and Coward, 2000; Marshall, 2000). Other works, based on disparate research methods and drawn from international experiences, suggest an average value for the elasticity of traffic volume with respect to travel time of about -0.5 in the short term, and up to -1.0 in the long term (Goodwin, 1996; Bar, 2000). Such findings contrast with earlier work, summarised in Reuter *et al.* (1979), in which estimated lane-mile elasticities were of a much smaller magnitude: 0.01 to 0.15.

The more recent results are broadly consistent with the assertions, made several decades ago, of two noted transport policy analysts, Anthony Downs and Wilfred Owen. Downs (1962, 1992), argued that expanding congested freeways triggers a phenomenon he termed "triple convergence" in which drivers shift their routes, times of travel, and modes in order to exploit the new capacity, thereby generating similar levels of congestion (at least during peak periods) as before. Downs' interpretation led Owen to conclude (1985: 366): "Meeting the ever-growing needs for transport capacity has often proved to be a fruitless task, as the persistence in urban traffic jams attest." In the United States, the contention that "you can't build your way out of traffic congestion" has become the rallying cry of the Surface Transportation Policy Project (STPP). In a recent report based on 15 years of data across 70 US metropolitan areas, STPP (1999) concluded that regions that invested heavily in expanding road capacity fared no better in easing congestion than areas that did not.

Past empirical research has not always been clear on distinguishing "induced travel" from "induced demand" (United Kingdom Department of Transport, 1993; Lee *et al.*, 1999). Induced travel is the more inclusive term, reflecting all changes in trip-making that are unleashed by a road improvement: (1) newly generated trips (that is, latent demand); (2) longer

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journeys; (3) changes in modal splits; (4) route diversions; and (5) time-of-day shifts. Induced demand is more restrictive, encompassing only the first three of these components, thereby representing only newly added VMT within a region. Past studies have focused on gauging changes in all five components of travel change (that is, "induced travel"), even though this is not always explicitly stated. This is partly because, short of placing an electronic tag on each traveller affected by a new road and monitoring his or her travel, disentangling the many contributors to increased travel — at least to a high degree of precision — can be a futile exercise (Bonsall, 1996). One way to gauge newly generated traffic, or induced demand, is to focus on changes in VMT at a county or metropolitan level *versus* along a specific project corridor; this is because the bigger the geographic area of study, the more likely it is that any route diversions are internal to the unit of analysis.

In addition to these definitional concerns, past research has been criticised on a number of other grounds. Most studies have considered VMT and lane-miles on higher-level facilities; for example, state or provincial highways. This raises the question of whether increases in VMT found in these studies represent shifts from lower-level facilities, either as the result of improvements to the main roads or, more trivially, the redesignation of roads from one category to the other, or altogether "new" traffic (Cohen, 1995; DeCorla-Souza and Cohen, 1999). A second line of criticism questions the normative significance of research findings. Even if the elasticities obtained are essentially correct, some contend, lane-mile growth accounts for only a small fraction of VMT growth (DeCorla-Souza, 1998). Moreover, it is argued, induced travel may increase the benefits from road improvements since the extra VMT is presumably generating some additional surplus that may or may not offset congestion impacts (Small, 1992; Hansen, 1998; Lee *et al.*, 1999).

A third claim, and potentially the most far-reaching one, is that induced traffic models confuse, or conflate, cause and effect (Sen, 1999). The statistical relationship between road supply and traffic is not the result of a simple, one-way, causal link between the former and the latter, but rather a simultaneous relationship in which more traffic also spawns more roads. The transport planning and programming process is designed to anticipate and respond to changes in traffic. Thus, the correlation between road supply and traffic could reveal nothing more than that this process is working successfully. Likewise, the STPP findings that road expansion fails to relieve congestion could simply indicate that regions are failing to keep pace with the burgeoning demand for additional road capacity. Irrespective of a traffic inducement effect, road supply will generally

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correlate with road use. Sceptics can easily claim that all or most of the observed relationships between traffic and road investment derive from good planning rather than traffic inducement.

The implications of this last argument are clearly profound. If most or all of the correlation between traffic and road supply derives from the effect of the former on the latter, then questions of interpretation or normative implication become mute. And if the same set of facts can equally support either causal interpretation, then policy debates are reduced to ideological conflicts no more resolvable than the question of when human life begins. It is therefore important to see whether the causal linkages between road supply and traffic can be disentangled.

This paper attempts to accomplish this by estimating a simultaneous set of equations from a dataset containing 22 years of observations from California urban counties. In the next section, we review and critique past efforts to determine the direction of causality between road supply and traffic. This is followed by a presentation of our methodology, research results, and conclusions.

#### Previous Work

As noted, recent work on induced travel demand has featured single-equation models in which VMT is the dependent variable and lane-miles is included among a vector of independent variables. The models are generally in log-linear form so that coefficients represent elasticities. Various single-equation regression techniques are employed to allow both short-run and long-run elasticities of VMT with respect to lane-miles to be estimated. Some representative studies of this kind, based on US experiences, include: Hansen and Huang (1997), who obtained a short-run elasticity of 0.3 and a long-run elasticity of 0.9 for California metropolitan areas; Noland and Cowart (2000), who, using state-level data, found short-run elasticities in the 0.3 to 0.5 range and long-run elasticities of 0.7 to 1.0; and Fulton *et al.* (2000), who, based on county-level data drawn from the mid-Atlantic states, calculated short- and long-run elasticities of 0.1 to 0.4 and 0.5 to 0.8 respectively. Despite some agreement across these studies that elasticities are not inconsequential and generally increase over time, all estimates are based on single-equation regression models, raising the concern that the estimates are "consistently inconsistent" as a result of simultaneity bias.

Efforts to disentangle the simultaneous relationship between lane-miles and traffic have to date been limited. One approach has been to examine

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sequences and patterns of changes. Seu (1999) used this approach to show that in the Chicago metropolitan area, "major population gains occurred in proximity to the expressways over a decade before the construction of the respective expressways." Another approach, used by Fulton *et al.* (2000), has been to include both forward and backward lags to predict changes in VMT as a function of changes in lane-miles. The authors found that the backward lags were significant while the forward lags were not, implying that changes in lane-miles generally precede changes in VMT. However, as Fulton *et al.* (2000, p.16) acknowledge, "this is not quite evidence of causality, i.e. that increases in lane miles *cause* increases in VMT, since the results can be explained by 'efficient' planning that correctly anticipates future growth in VMT by building new capacity in advance." (Italics in original.)

A more rigorous approach is to estimate a simultaneous system of equations in which lane-miles and VMT are both treated as endogenous variables. To do this successfully, it is necessary to find exogenous variables that directly influence one endogenous variable but not the other. For example, if the costs of road construction varied significantly over time and across regions, we would expect this to affect road supply but not (directly) the demand for roads. In this case, the effect of road supply on traffic could be inferred from the statistical relationships between road supply and construction cost (termed an "instrument variable" in this context) and VMT and construction cost.

Accounting for endogeneity effects can be difficult due to a lack of suitable instrument variables. Even though construction cost is a logical candidate, the only readily available highway construction cost index in the US is a national one. While a number of other variables influence lane-miles, most that are easy to obtain are likely to directly affect VMT as well. As part of a single-equation regression analysis of induced demand across the US, Noland and Cowart (2000) use metropolitan land area and population density as instrument variables for lane-miles, but it is highly likely that both of these also have a direct impact on VMT since travel generally increases with the geographic size and use-intensity of land. The search for more appropriate instrument variables was a major focus of our study.

#### Research Methodology

A pooled time-series/cross-section of data on road supplies, demand, and various control variables was compiled for the state of California. California was chosen for empirically studying these endogeneity questions not

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only because the state department of transport (CalTrans) maintains rich and reliable time-series data, but also because the state provides a fairly good portrait of urban, suburban, and exurban settings for studying induced travel demand impacts.

The time period chosen for the analysis was 1976 to 1997, a period of rapid growth and change. The population of the state increased by 50 per cent over this 22-year period, from 22 to 33 million. Annual state highway lane-mile and VMT data for the state's 34 urbanised counties with central-city populations of 50,000 or more (as of 1990) were available from CalTrans. In total, then, 22 years of 34 cross-sectional observations, or 748 data points, were available for the analysis.

We turned to county-level data to carry out the analysis for several reasons. Compared to a project-level grain of analysis, county data better capture network effects of road expansions, such as the additional access and egress traffic on unimproved roads that connect to newly improved ones. Capturing area-wide effects is important since road improvements have spillover impacts that reverberate throughout a network. While metropolitan-level data offer an even larger geographic context for capturing spillover effects, it was felt that studying impacts at the regional level would overly dilute the analysis since many key metropolitan areas (such as greater Los Angeles or the San Francisco Bay Area) encompass large geographies. Thus, as a balance between municipal/corridor level data and metropolitan-wide data, counties provide a meso-scale, "middle ground" for capturing induced travel demand impacts. Also, by using county-level data, this and similar analyses are thought to capture "induced demand" (for example, newly generated traffic, longer trips, and modal shifts) since route diversions largely occur within the unit of analysis. Thus, the term "induced demand" is used to reflect the study's focus on newly added traffic, as reflected by increases in countywide VMT over time.

An econometric modelling framework was used to probe roadway supply-demand relationships in California. A two-way system of equations was simultaneously estimated, taking the form:

$$\text{Demand Model: } D_t = f(S, P, A, I, L, F)_t$$

$$\text{Supply Model: } S_t = g(D, A, L, G, F)_t$$

where:  $D$  = Travel demand vector (vehicle miles travelled);  $S$  = Roadway supply vector (lane miles of major road facilities);  $P$  = Price vector (fuel price per gallon);  $A$  = Population Attribute vector (population size; demographics);  $I$  = Income-effects vector (per capita income levels);  $L$  = Localised-effects vector (land-use densities; meteorological characteristics);  $G$  = Governance and policy factors vector (state political party

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The core variables used as candidate predictors in this research and their sources are summarised in Tables 1 and 2. Table 1 presents the primary predictor variables, whereas Table 2 lists variables that were candidates for predicting and instrumenting road supply. The metric we used to represent travel demand was vehicle miles travelled (VMT) on state-owned facilities, which consisted principally of freeways, arterials, and other major thoroughfares. Supply was represented by lane-miles of the same facilities used in measuring travel demand. Care was taken to ensure that "apples and apples" were being compared, including making adjustments to account for newly designated state facilities and the re-assignment of existing facilities to state jurisdiction. Limiting the analysis to state owned and maintained facilities meant that other, sometimes significant, roadways (for example, county collectors) were omitted from the analysis; however, the advantages of using consistent and reliable data more than offset the disadvantage of an incomplete universe of road facilities, in our judgement.

Table 1 shows a host of variables related to vehicle operating cost, population size and composition, income levels, and fuel economy were culled from various sources as candidate predictors. Unavoidably, problems of multi-collinearity were encountered in simultaneously using all as predictors; hence variables chosen as predictors were selected based on contributions to fit and consistency with theory.

Table 1  
Key Predictor Variables and Sources

Dimension	Variable	Sources
Demand	VM, state facilities	Caltrans files, Department of Finance
Supply	Lane-Mile, state facilities	Caltrans files, Department of Finance
Price	Operating Cost/Mile	AAA, <i>Year-Driving Costs</i> , 1997
	Retail Gas Price, local	U.S. Department of Energy, Energy
	cents/gallon	Information Administration
	Gas, Tax, state,	U.S. Department of Commerce, <i>The</i>
	cents/gallon	<i>Book of States</i> , various years
Population	County Population	CA Dept. of Finance, files
	Population by race	CA Dept. of Finance, files
	Density, Persons per acre	CA Dept. of Finance, files
	Density, Workers per acre	CA Dept. of Finance, files
Income	Personal Income, median (\$600)	U.S. Department of Commerce, Bureau of Economic Analysis
Fuel economy	Pers. Car, average miles per gallon	U.S. Department of Transportation, FHWA, <i>Highway Statistics</i> , various years

Key: Caltrans: California Department of Transportation; AAA: Automobile Association of America; CA = California; VMT = vehicle miles travelled.

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**Table 2**  
Candidate Predictor and Instrument Variables for Predicting Road Supply

Dimension	Variable	Source
Geography/Weather	Precipitation, inches	CA Dept. of Finance, <i>California Almanac</i>
	Heating Degree Days	CA Dept. of Finance, <i>California Almanac</i>
	Cooling Degree Days	CA Dept. of Finance, <i>California Almanac</i>
	Low daily temp., avg.	CA Dept. of Finance, <i>California Almanac</i>
	High daily temp., avg.	CA Dept. of Finance, <i>California Almanac</i>
Air Quality	Lowest Elevation, feet	CA Dept. of Finance, <i>California Almanac</i>
	Highest Elevation, feet	CA Dept. of Finance, <i>California Almanac</i>
	No. Days >NAAQS	California Air Resources Board, data files
	Max. 1r, CO, ppm	California Air Resources Board, data files
	Max. 8 hr, CO, ppm	California Air Resources Board, data files
Politics	Max. 1r, ozone, ppm	California Air Resources Board, data files
	Governor's Party (0-1)	U.S. Department of Commerce, <i>The Book of States</i>
	Gov. in 2nd Term (0-1)	U.S. Department of Commerce, <i>The Book of States</i>
	House Majority, party affiliation (0-1)	U.S. Department of Commerce, <i>The Book of States</i> , various years
	Senate Majority, party affiliation (0-1)	U.S. Department of Commerce, <i>The Book of States</i> , various years
	Local Assembly Rep. On Transp. Committee (0-1)	California Assembly, <i>CA Roster</i> , various years
	Local Assembly Rep. Chair Transp. Com. (0-1)	California Assembly, <i>CA Roster</i> , various years
	Local Senate Rep. On Transp. Committee (0-1)	California Assembly, <i>CA Roster</i> , various years
	Local Senate Rep. Chair Transp. Com (0-1)	California Assembly, <i>CA Roster</i> , various years

Key: NAAQS = National Ambient Air Quality Standard; CA = California; CO = Carbon Monoxide; ppm = parts per million.

Table 2 summarises variables that served as both potential predictors and instruments of the supply-side endogenous variable, roadway lane miles. The set of topographic and meteorological variables sought to gauge how extremes in weather and terrain might account for variation in road development, other things being equal. More mountainous areas with greater temperature extremes and high levels of precipitation, for example, might receive capacity additions as part of road reconstruction and rehabilitation programmes. Air quality is thought to shape road investment programmes for legal and policy reasons. What is unclear, however, is whether worsening air quality, on balance, encourages or discourages road expansion. On the one hand, new roads promise to relieve congestion and increase average travel speeds, which generally contributes to improved air quality; on the other hand, proposed road

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improvements are often opposed on the grounds that they exacerbate air quality over the long run by inducing sprawl and car-oriented development. Several road projects in the San Francisco Bay Area were legally challenged on the very grounds that road expansions induce sprawl; however, the courts generally sided with the argument that roads, by increasing travel speeds, on balance have a positive air-quality impact (Garret and Wachs, 1996). Lastly, a series of variables on executive and legislative party affiliations and committee assignments were compiled to gauge the influences of politics on road development in the state. Representation from a local (that is, municipal or county) elected official on a state transport committee, or better still, having a local politician as chairperson of such a committee, might be expected to result in relatively high levels of local road investments. In the US, conventional wisdom also holds that Republican administrations are friendlier to road programmes than their Democratic counterparts, who tend to focus more on social programmes. Thus, the analyses that follow examine how politics and parochialism have shaped road development in California over the last quarter of the twentieth century.

### Empirical Findings

The 3SLS estimation results are presented in Tables 3 and 4. Both models, simultaneously estimated, represent best-fitting equations that are free of serious collinearity problems and violations of underlying estimation assumptions. In the three-stage technique, all exogenous variables in the system of equations (that is, the variables other than VMT and lane-miles) were used as instruments in estimating the two endogenous variables, VMT and roadway lane-miles. Because there were no serial auto-correlation problems in the calibration of models, there was no need to first-difference equations.

These model results are consistent with theory and much of the empirical literature to date. Notably, a strong short-term travel *induced-demand effect* was uncovered from the 22 years of county-level California data: from the elasticity estimate, every 10 per cent increase in lane-mile capacity was associated with a 5.9 per cent increase in VMT, controlling for other factors including the simultaneous influences of road supply and demand. However, the results also reveal a significant *induced-investment effect*, with lane-mile additions significantly explained by VMT: a 10 per cent increase in VMT was associated with a 3.3 per cent increase in lane-

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**Table 3**  
Induced Demand Model: Natural Logarithm of Annual Countywide Vehicle Miles Travelled (VMT), 34 California Counties, 1976 to 1997; 3SLS Estimation

	Coefficient	Std. Error	t-Statistic	Prob.
Natural Log of:				
Lane-Miles	0.388	0.026	21.17	0.000
Population	0.696	0.090	21.02	0.000
Employment density	-0.079	0.013	-4.30	0.000
Income, \$ per capita	0.094	0.012	27.51	0.000
Gas Price, local, cts.	-0.179	0.016	-11.62	0.000
County Fixed Effects:				
Los Angeles	-0.563	0.035	-15.79	0.000
Orange	-0.122	0.021	-5.84	0.000
San Bernardino	-0.843	0.030	-28.24	0.000
Riverside	-0.694	0.021	-28.57	0.000
Ventura	-0.469	0.021	-22.52	0.000
San Diego	-0.533	0.027	-19.41	0.000
Santa Barbara	-0.547	0.018	-30.22	0.000
Contra Costa	-0.687	0.023	-3.73	0.000
Santa Clara	-0.396	0.021	-14.29	0.000
Sonoma	-0.475	0.020	-24.22	0.000
Napa	-0.357	0.021	-17.09	0.000
Sacramento	-0.405	0.018	-21.86	0.000
Yolo	-0.396	0.022	-13.96	0.000
Monterey	-0.579	0.020	-29.41	0.000
Santa Cruz	-0.251	0.018	-21.85	0.000
San Luis Obispo	-0.502	0.023	-25.17	0.000
Fresno	-1.051	0.023	-44.78	0.000
El Dorado	-0.344	0.021	-15.64	0.000
Placer	-0.111	0.019	-5.78	0.000
Kern	-0.847	0.022	-37.75	0.000
Madison	-0.069	0.025	-2.79	0.006
Sutter	-0.298	0.023	-12.75	0.000
Merced	-0.348	0.020	-17.57	0.000
Tulare	-0.835	0.022	-37.02	0.000
San Joaquin	-0.417	0.017	-23.85	0.000
San Joaquin	-0.603	0.022	-27.02	0.000
Butte	-0.855	0.022	-38.25	0.000
Shasta	-0.549	0.022	-25.49	0.000
Yuba	-0.296	0.028	-10.53	0.000
Constant	0.162	0.175	0.86	0.552

Summary Statistics:

No. of Cases: 713

F Statistic = 6337, prob. = 0.000

R-Square = 0.996

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**Table 4**  
Induced Investment Model: Natural Log of Annual Countywide Lane Miles of Freeway-Highway Capacity, 34 California Counties, 1976 to 1997; 3SLS Estimation

	Coefficient	Std. Error	t-Statistic	Prob.
Natural Log of:				
VMT	0.320	0.024	15.47	0.000
Population	0.516	0.020	26.65	0.000
Employment density	-0.221	0.006	-57.69	0.000
White Pop., prop.	0.411	0.060	5.59	0.000
Gov. Party, 1 = Dem., lag	0.097	0.008	12.09	0.000
CO Max 1 Hour, ppm, lag	0.060	0.006	9.85	0.000
Temperature Diff., low-hi	0.501	0.027	18.61	0.000
County Fixed Effects:				
Los Angeles	0.497	0.027	18.58	0.000
Orange	0.183	0.027	6.77	0.000
San Diego	0.390	0.025	15.97	0.000
Santa Barbara	0.102	0.016	6.44	0.000
Alameda	0.434	0.027	16.13	0.000
Contra Costa	-0.218	0.018	-12.10	0.000
San Francisco	0.261	0.028	9.02	0.000
San Mateo	0.252	0.020	13.88	0.000
Marin	-0.269	0.018	-14.61	0.000
Selma	-0.123	0.018	-6.88	0.000
Socoma	-0.305	0.021	-14.84	0.000
Napa	-0.281	0.019	-14.26	0.000
Yolo	0.183	0.018	10.16	0.000
Monterey	0.125	0.020	6.34	0.000
Santa Cruz	0.796	0.079	10.05	0.000
San Luis Obispo	0.151	0.016	9.33	0.000
Kern	0.448	0.016	26.97	0.000
Madison	-0.433	0.019	-22.23	0.000
Stanislaus	-0.300	0.017	-15.65	0.000
Butte	-0.271	0.025	-10.83	0.000
Sutter	-0.317	0.021	-14.63	0.000
Yuba	-0.473	0.023	-20.61	0.000
Constant	-3.827	0.159	-25.40	0.000

Summary Statistics:

No. of Cases: 713

F Statistic = 3645, prob. = 0.000

R-Square = 0.994

mile additions, all else being equal and simultaneous influences accounted for. Thus, "induced demand" effects were found to be stronger than "induced investment" effects, although not overwhelmingly so. Regarding the polarised debate that swirls around induced travel demand, as often is the case with ideological differences, there is some truth in both sides of the

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argument. That is, California experiences suggest that road investments induce travel demand and traffic growth induces road investments. The former dynamic appears to be stronger than the latter; however, both sets of relationships are statistically significant.

In terms of model estimation, failure to account for simultaneous influences invariably leads to biased parameter estimates. Because the two endogenous variables are positively correlated with each other, the direction of bias in many past studies has probably been an overstatement of induced travel demand effects. Despite this, we uncovered a respectable elasticity of 0.588 for induced travel demand from our database, in line with estimates of Hansen and Huang (1997) who used single-equation (non-simultaneously estimated) models in estimating elasticities for California counties. This is partly explained by the fact that the models presented in this paper have different specifications, are estimated on a different set of years, and are thus not completely comparable with the earlier work. Consequently, our models could very well be yielding elasticity results that are fairly consistent with less well-specified models that contain biases due to single-equation estimation. And in relation to elasticity estimates from our models and those of other researchers who have built single-equation models using data from other states, the comparability of results could very well be due to stronger induced demand effects in California, America's most populous state and, in aggregate terms, the fastest growing one.

It is worth noting that including county fixed effects enhanced the simultaneous equations. Statistically, their chief role was to improve model specification, similar to the induced demand work carried out by Noland and Cowart (2000) and Fulton *et al.* (2000). Still, both the induced demand and induced investment models were highly significant even when county fixed effects were excluded in model runs (with *R*-Squares of 0.94 or more). Adding fixed effects helped to specify more fully the system of equations (revealed by marginal increases in *R*-Squares to over 0.99), thus refining elasticity estimates of induced travel demand and induced roadway investments.

**Induced demand model**

Besides the strong influence of lane-mile additions on VMT, other explanatory relationships revealed in Table 3 are also of policy interest. Population growth most strongly accounted for VMT increases. Because of the steady pattern of year-to-year population increases among California counties, the population variable also served as a secular-trend proxy, obviating the need for any temporal fixed-effect variable.

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Table 3 shows that, as expected, VMT was market-sensitive—it rose with personal income levels and fell as local fuel prices increased, both expressed in constant 1990 currency. Areas with relatively dense employment averaged less VMT, controlling for other factors (notably population), suggesting that commuting alternatives (for example, better public transport in denser settings) and other influences (for example, higher parking charges in denser settings) worked to suppress VMT. Cross-sectional fixed effects were significant for 29 of the counties, indicating lower levels of travel consumption relative to the five suppressed Bay Area counties — San Francisco, Alameda, San Mateo, Marin, and Solano counties.

Overall, the VMT model had superb predictive abilities, explaining virtually all of the variation in travel consumption across the 34 California counties over the 22-year time period. This near-perfect fit was attributable largely to core variables that closely tracked VMT secularly, notably population and income.

**Induced investment model**

Table 4 reveals that, in addition to VMT, California's roadway capacity responded to population trends (that is, demographic characteristics), localised effects (that is, density and temperature differentials), and policy-related influences (that is, governor party affiliation and air-quality levels). Consistent with expectations, road investments increased with population size and temperature differentials and decreased with employment density. Settings with wide swings in yearly temperatures have been recipients of more road improvements, most probably because higher investments in maintenance and road reconstruction afford opportunities for piggy-backing road expansions onto these programmes. High employment densities probably act as a deterrent to road investments since right-of-way acquisitions tend to be costlier and Not-In-My-Backyard (NIMBY) resistance to potential disruptive effects tends to be stronger in more urbanised settings.

Signs on the other predictor variables are less grounded *a priori* and thus warrant explanation. Unexpectedly, our analysis revealed some sensitivity in state road investments with respect to county racial composition. Controlling for population size, VMT, and other factors, counties with higher shares of white residents averaged more road-capacity expansion. While one might argue this reflects the tendency of whites to live in suburban areas where roads tend to be more plentiful, this was so even when controlling for county fixed effects, including the unique influences of counties that are quintessentially suburban, such as Orange County in Southern California and Solano County in the San Francisco Bay Area.

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The positive coefficient on the air-pollution variable, represented by maximum levels of carbon monoxide (CO) emissions recorded in one hour (expressed in parts per million) the previous year, was not totally expected. As discussed earlier, road improvements are variously viewed as an asset and a liability in relation to air pollution. To the degree they reduce stop-and-go traffic, they generally improve air quality (CO in particular); to the degree they spawn VMT increases, as revealed in this model, they worsen air quality. On balance, it appears that the former argument has succeeded over the latter in California public policy circles. That is, worsening of air quality in prior years appears to be a catalyst to road expansion, all else being equal. Because of the time commitments involved in proposing and programming road improvements, one might contend that a longer lag period than one year should be used to represent the influences of prior air quality levels on contemporaneous road investments. Longer lagged structures were indeed attempted in the exploratory phases of model construction; however, these consistently provided poorer model fits — and not to be overlooked, at the loss of considerable degrees of freedom. Accordingly, one-year lags were used. It might very well be that prior-year slippages in air quality add momentum to road investment initiatives and perhaps, during periods of budget constraints, make a difference in which projects are built and which ones are delayed. Or, as argued above, planners may have anticipated the congested conditions giving rise to high CO levels in planning and programming decisions that were made years earlier.

Most surprising was the influence of party affiliation the prior year on contemporary state road investments. In California, road supply is higher, other things being equal, when a Democrat is governor. This reflects the historical evolution of the California highway program. The 1974–82 period when Jerry Brown was California's governor coincided with a rapid deceleration in the state's highway construction programme because of a variety of factors, including increased costs, declining fuel tax revenues, heightened environmental concerns, and Brown's own multi-modal transport policy (Taylor 1992). Subsequent Republican governors were unable to resurrect this programme. Thus, while the California population and economy have grown rapidly in the past two decades, road supply has not kept pace, and, controlling for these variables, road expansions have been more tentative under the later, Republican, administrations.

Table 4 also reveals distinct county-by-county variations in road investments even when controlling for other variables such as VMT and population. Based on the positive coefficients, many urbanised counties, particularly those in Southern California, were recipients of relatively high levels of road improvements over the 1976 to 1997 period. This could

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reflect the need for major road improvements following the widespread damage caused by major earthquakes during this period (such as, the 1994 Northridge incident). The high positive signs on the fixed-effects variables representing San Francisco, Alameda, San Mateo, Santa Cruz, and Monterey Counties similarly may reflect the massive road rebuilding that followed the catastrophic 1989 Loma Prieta earthquake.

Overall, the model shown in Table 4 was a very good predictor, explaining over 99 per cent of the variation in lane-mile additions. While much of the explained variation was attributable to secular population growth, VMT was not an inconsequential factor in explaining road development in California. One should expect nothing less, for any competent highway planning and development programme should fully anticipate and respond well in advance to unfolding trends in travel demand.

**Intermediate-term relationships**

As measures of short-term elasticities, our estimates of induced traffic demand effects from Table 3 are in line with those of earlier studies (see, Goodwin 1996; Hansen and Huang 1997; Fulton *et al.*, 2000). For purposes of measuring induced-demand and induced-investment effects over longer time horizons, we re-estimated the models using polynomial distributed lagged structures. For both the supply and demand equations, models were fitted assuming second-degree polynomial lags with five-year lag periods (and no endpoint restrictions). Exponential distributions were also attempted, similar to those reported by Noland and Cowart (2000); however, our data suggested that induced-demand and induced-investment effects did not diminish exponentially over time lags but rather followed more of a convex-shaped delayed-response pattern.

Table 5 presents the results of the distributed-lagged model for predicting induced-demand effects. Because coefficients on the fixed-effect variables were similar to those of the 3SLS model (Table 3), only coefficients for the primary predictor variables are shown. Slightly significant auto-correlation (revealed by Durbin-Watson statistics) prompted us to estimate the second-degree polynomial distributed lag model using first-order autoregressive estimation (Yule Walker estimates). The convex nature of the lagged response effects is revealed by the coefficient weights, with VMT adjustments appearing to be the strongest one year after road expansion, and influences tapering thereafter. A sum of lag coefficients provides an additive estimate of the intermediate induced demand elasticity: +0.79. This estimate aligns with those of other recent studies that have computed longer-term lane-mile elasticities using distributed lag models (Noland and Cowart, 2000; Fulton *et al.*, 2000). Whereas other studies have imputed longer-term

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**Table 5**  
Intermediate-Term Induced Demand Model: Polynomial Distributed Lag  
Structure; Constant and Fixed-effect Controls not Shown

	Coefficient	Std. Error	t-Statistic	Prob.
Natural Log of:				
Lane Miles (-4)	0.197	0.007	28.19	0.000
Lane Miles (-3)	0.223	0.005	26.69	0.000
Lane Miles (-2)	0.173	0.011	15.70	0.000
Lane Miles (-1)	0.130	0.010	11.93	0.000
Lane Miles (0)	0.056	0.009	6.24	0.000
Lane Miles (1)	0.022	0.005	4.56	0.000
Population	0.099	0.033	21.06	0.000
Employment density	-0.107	0.020	-11.77	0.000
Income, \$ per capita	0.227	0.010	22.84	0.000
Gas Price, local, etc.	-0.223	0.016	-13.92	0.000
Fixed Effects/Constant	***	***	***	***

Summary Statistics:

No. of Cases: 625

F-Statistic = 3554, prob. = 0.000

R-Square = 0.986

induced demand using a single-period lag on both lane-miles and VMT (that is, as a lagged-endogenous term), we were able to estimate directly the longer-term elasticity from the additive coefficients on the distributed lag model (Johnston, 1984; Pindyck and Rubinfeld, 1991).

Results of the distributed lagged model for estimating induced-investment effects, also estimated using auto-regressive techniques, are shown in Table 6. (Again, coefficients on the many fixed effect variables are not shown.) An even stronger convex quadratic structure is revealed by the coefficients on the lagged terms of this model. As both theory and common sense hold, road investments appear to be strongly influenced by traffic loads in previous periods. From the sum of distributed lag coefficients, the estimate five-year (intermediate-term) elasticity is +0.66. This is a far bigger jump from the near-term elasticity than in the case of the induced-demand model, suggesting that induced-investment effects build more strongly over time than do induced-demand effects.

**Triangulation: Granger Causality Testing**

For purposes of cross-checking the simultaneous estimations findings and triangulating the research design, a Granger (1969) causality test was

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**Table 6**  
Intermediate-Term Induced Investment Model: Polynomial Distributed Lag  
Structure; Constant and Fixed-effect Controls not Shown

	Coefficient	Std. Error	t-Statistic	Prob.
Natural Log of:				
VMT (-4)	0.154	0.011	12.89	0.000
VMT (-3)	0.209	0.016	13.07	0.000
VMT (-2)	0.191	0.015	12.65	0.000
VMT (-1)	0.126	0.011	11.32	0.000
VMT (0)	0.067	0.006	11.16	0.000
VMT (1)	-0.021	0.005	-4.14	0.000
Population	0.005	0.034	17.79	0.000
Employment density	-0.356	0.014	-25.19	0.000
Gov. Party, 1 = Dem., 0 = Rep.	0.045	0.002	4.99	0.000
CO max 1 hr, ppm, lag	0.042	0.007	5.86	0.000
Temperature Diff., low-hi	0.714	0.059	10.42	0.000
Fixed Effects/Constant	***	***	***	***

Summary Statistics:

No. of Cases: 622

F-Statistic = 2279, prob. = 0.000

R-Square = 0.997

conducted using the same dataset. The Granger test infers the direction of causality based on establishing a clear time ordering in the predictability of two correlated variables. If a variable  $X$  is a causal factor for a variable  $Y$ , then a model for  $Y$  that includes past values for  $X$  as well as past values for  $Y$  should perform better than a model that includes only past values of  $Y$ . Thus one can test the null hypothesis that  $X$  does not cause  $Y$  by estimating a model relating  $Y$  to past values of  $X$  and  $Y$  and testing the restriction that coefficients on the  $X$  variables are all zero. An analogous test can be performed to determine whether  $Y$  is a causal factor in explaining  $X$ . Thus, given two correlated variables, one can use the Granger test to infer whether  $X$  causes  $Y$ ,  $Y$  causes  $X$ , or both, or neither.

Results of the Granger test are summarized in Table 7. The length of lagged structure in any Granger test is guided partly by theory but mostly by what provides the best statistical fits. With our database, a two-year lagged structure yielded the best statistical results. For purposes of testing whether lane-mile capacity adds significant incremental explanatory power in explaining variation in VMT, the reduced model took the lagged form of:  $VMT_t = f(VMT_{t-1}, VMT_{t-2})$ . The full model was expressed as:  $VMT_t = f(VMT_{t-1}, VMT_{t-2}, LANEMILE_{t-1}, LANEMILE_{t-2})$ . The null hypothesis of no value-added was easily rejected. Thus, consistent with the earlier results, road capacity passed the Granger test as a significant

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**Table 7**  
Granger Causality Test Results for Two-Year Time Lagged Structure  
(*N* = 680)

	Sum of Square Errors		Exploratory Improvement F-Statistic (probability)	H <sub>0</sub> Action
	Reduced Model	Full Model		
<b>VMT Model:</b>				
H <sub>0</sub> : "Lane Miles" do not add significant incremental explanatory power	3.83E+13	3.68E+13	13.774 (.002)	Reject
<b>Lane Miles Model:</b>				
H <sub>0</sub> : VMT does not add significant incremental explanatory power	1,291,139	1,165,647	36.330 (.003)	Reject

incremental predictor in explaining variation in VMT. When the analytical process was reversed, with two-year lags of VMT added to a lane-mile model with one- and two-year lags of the endogenous variable, it was found previous-year VMT levels significantly affected lane miles. Overall, then, the Granger results were wholly consistent and reinforced the econometric results — during the past quarter-century in California, at least, road supply and demand have jointly influenced one other.

## Conclusions

Our research found, unequivocally, a strong two-way empirical relationship between road supply and demand, as theory holds. Over the past several decades in California, road supply has been both a cause and an effect in relation to VMT. That is, our analysis showed significant *induced-demand* and *induced-investment* effects. Presumably, past state highway investments were based on levels of travel demand that were anticipated — suggesting, in California at least, that road investments not only stimulated travel demand but responded to it as well. While the effects of lane-mile additions on VMT appear to be stronger than vice-versa, both relationships are significant and should be acknowledged when addressing policy questions related to congestion relief and highway development. Like most policy debates full of ideology, the truth often lies somewhere in

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between the extreme positions of the debaters. The findings of this research occupy this middle ground.

Consistent with other studies, our research shows induced-demand effects build over time, revealed by an increase of the short-term elasticity estimate of +0.59 to +0.79 over the intermediate term. Our research also suggests that induced-investment effects build even more rapidly, with the estimated short-term elasticity of +0.33 doubling to +0.66 within a five-year time horizon. While the simultaneous structure used in this study is appealing theoretically, and performs well statistically, we were somewhat surprised that lane-miles respond to contemporaneous or near-contemporaneous exogenous influences even though project implementation can take many years. These results can be partly explained by the "look-ahead" nature of transport planning. However, they are also revealed by the strong correlations of contemporaneous values of the endogenous variables, VMT and lane miles, to lagged values; when polynomial distributed lag structures were used to estimate relationships, insights into the delayed-response of road investments to VMT increases were revealed.

Besides shedding light on the core research question of how road supply and demand jointly influence each other, this research yielded several other useful policy insights. Overall, state road projects in California appear to have been fairly de-politicised, with investments governed mainly by need (for example, growth in VMT and population). Still, governor party affiliation appeared to have some bearing on statewide road development, with Democratic administrations presiding over periods of more abundant road supply, partly a result of historical happenstance. Our research also uncovered possible race-based inequities in road development. While we do not believe that racial discrimination has overtly influenced transport investment decisions, nevertheless California's past allocation of roads has gone disproportionately to counties with predominantly white populations. In addition, our analysis disclosed that deterioration in air quality has generally worked in favour of road expansion, ostensibly as a means of improving traffic flows, at least at the margin. While the desire to expedite traffic movements has never been a centerpiece of air-quality policies in California over the years, the fact that most transport and air-quality forecasting models assign benefits to higher average speeds has no doubt played some role in promoting road development in the state.

Despite the advance over single-equation estimates of induced travel demand, our "bottom-line" elasticity estimates fall well within the range of earlier studies. Single-equation methodologies are no doubt subject to simultaneity bias; however, this does not seem to have greatly distorted

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their results. While some sceptics continue to castigate the elasticities from induced demand studies as nothing more than "random numbers", they cannot deny that these numbers have a central tendency.

Although simultaneous equations improve internal validity, we acknowledge that the use of aggregate data can increase the chance of drawing spurious inferences. We used county-level data, as have other researchers, since the spillover effects of road improvements on connecting facilities can be more readily captured. Several recent studies (see, Strathman *et al.* 2000; Barr, 2000) have sought to examine the travel-demand impacts of road improvements using household travel diary data. These disaggregate studies derived lower elasticities than those of most aggregate-scale analyses. However, as cross-sectional studies with fairly poor statistical fits, and which ignore impacts of road improvements on commercial travel, studies based on household travel diaries have limitations as well. While our understanding of induced travel demand remains incomplete, as empirical evidence accumulates and model specifications improve, a balance of aggregate and disaggregate research should help close some of the existing knowledge gaps regarding how urban roadways and travel jointly influence each other.

References

- Barr, L. (2000). "Testing for the significance of induced highway travel demand in metropolitan areas." Paper presented at the 79th Annual Meeting of the Transportation Research Board, Washington, D.C.
- Bonsall, P. (1996). "Can induced traffic be measured by surveys?" *Transportation* 23, 17-34.
- Cohen, H. (1995). "Review of empirical studies of induced traffic." *Expanding Metropolitan Highways: Implications for Air Quality and Energy Use, Special Report 245*, Washington, D.C., National Academy Press: 295-309.
- DeCora-Souza, P. (1998). "Induced highway travel, transportation policy implications," *Transportation Quarterly* 51, 13-30.
- DeCora-Souza, P. and H. Cohen. (1999). "Estimating induced travel for evaluation of metropolitan highway expansion," *Transportation* 26, 249-62.
- Dowos, A. (1962). "The law of peak-hour expressway congestion," *Traffic Quarterly*, 16, 393-409.
- Downs, A. (1992). *Stuck In Traffic: Coping with Peak-Hour Traffic Congestion*. Brookings Institution: Washington, D.C.
- Fulton, L., D. Mesler, R. Noland and J. Thomas (2000). "A statistical analysis of induced travel effects in the US mid-Atlantic region." *Journal of Transportation and Statistics* 3, 1-14.
- Garrett, M. and M. Wachs (1995). *Transportation Planning on Trial: The Clean Air Act and Travel Forecasting*. Sage Publications: Thousand Oaks, California.

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- Goodwin, P. (1996). "Empirical evidence on induced traffic: a review and synthesis." *Transportation* 23, 35-54.
- Granger, J. (1969). "Investigating causal relations in econometric models and cross-spectral methods," *Econometrica*, 37, 424-38.
- Hansen, M. (1998). "The traffic induction effect: Its meaning and measurement," *Transportation Research Circular*, 481, 7-15.
- Hansen, M. and Y. Huang (1997). "Road supply and traffic in California urban areas," *Transportation Research A*, 31, 205-18.
- Johnston, J. (1984). *Econometric Methods*. McGraw-Hill: New York.
- Lee, D., L. Klein and G. Canus (1999). "Induced traffic and induced demand," *Transportation Research Record* 1659, 68-75.
- Marshall, N. (2000). "Evidence of induced demand in the Texas Transportation Institute's urban roadway congestion study data set." Paper presented at the 79th Annual Meeting of the Transportation Research Board, Washington, D.C.
- Noland, R. and W. Cowart (2000). "Analysis of metropolitan highway capacity and the growth in vehicle miles of travel." Paper presented at the 79th Annual Meeting of the Transportation Research Board, Washington, D.C.
- Owens, W. (1985). "Transportation and world development," *Transportation Quarterly*, 39, 365-75.
- Priddy, R. and D. Rubinfeld (1991). *Econometric Models & Economic Forecasts*. McGraw-Hill: New York.
- Reuter, E., W. Loudon, C. Kern, D. Bell, M. Rothenberg and T. Austin (1979). *The Vehicle-Miles of Travel-Urban Highway Supply Relationship of Changes in Urban Highway Supply to Vehicle-Miles of Travel*. Final Report, U.S. Department of Transportation, Federal Highway Administration, Washington, D.C.
- Sen, A. (1999). *Highways and Urban Decentralization*, Chicago, University of Illinois at Chicago, Report prepared for the Illinois Department of Transportation.
- Small, K. (1992). *Urban Transportation Economics*, Chur, United Kingdom: Harwood Academic.
- Strathman, J., Duckert, J., Sanchez, T., Zhang, J., and Riis, A. (2000). *Analysis of Induced Travel in the 1995 NPTS*. Washington, D.C.: U.S. Environmental Protection Agency, Office of Transportation and Air Quality, final technical report.
- Surface Transportation Policy Project (1998). *An Analysis of the Relationship Between Highway Expansion and Congestion in Metropolitan Areas: Lessons from the 15-Year Texas Transportation Institute Study*, Washington, D.C., STPP, 1998.
- Taylor, B. (1992). *When Finance Leads Planning: The Influence of Public Finance on Transportation Planning and Policy in California*. Los Angeles: University of California at Los Angeles, School of Urban Planning, doctoral dissertation.
- United Kingdom Department of Transport (1993). *COBA Manual Revisions to 15/11/93*. London: Department of Transport, Highways Economics and Traffic Appraisal Division.

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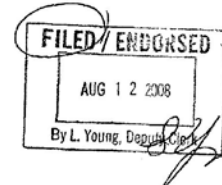
**Attachment D**

Environmental Council of Sacramento v. California  
Department of Transportation  
Case No. 07CS00967  
July 15, 2008

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11 IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA  
12 FOR THE COUNTY OF SACRAMENTO

13 ENVIRONMENTAL COUNCIL OF )  
14 SACRAMENTO; and NEIGHBORS )  
15 ADVOCATING SUSTAINABLE )  
16 TRANSPORTATION )

Case No. 07CS00967

17 Petitioners )

~~PROPOSED~~ JUDGMENT GRANTING  
PETITION FOR WRIT OF MANDATE

18 v. )

19 CALIFORNIA DEPARTMENT OF )  
20 TRANSPORTATION, WILL KEMPTON, )  
21 Director; and, DOES 1 through 20; )

22 Respondents )

23 This matter came on for a hearing on the Petition for Writ of Mandate on March 21, 2008,  
24 and was heard, argued, and submitted for decision in Department 29 of the above-entitled Court,  
25 the Honorable Timothy Frawley presiding. Donald B. Mooney appeared on behalf of Petitioners  
26 Environmental Council of Sacramento and Neighbors Advocating Sustainable Transportation.  
27 Martin Keck appeared on behalf of Respondents California Department of Transportation  
28 ("Caltrans") and Will Kempton, Director of Caltrans.

The Court having reviewed the record of Respondents' proceedings in this matter, the  
briefs submitted by counsel and the arguments of counsel, the matter having been submitted for